HITACHI

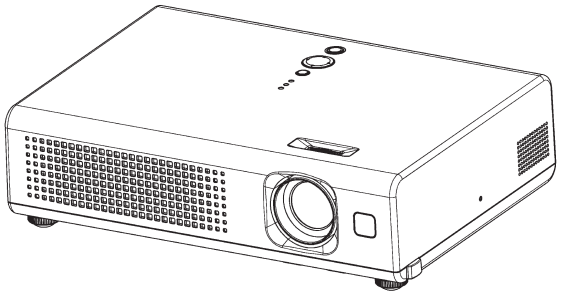
YK | No.0556E

SERVICE MANUAL

PJ-LC9
(C12H)

⚠ Warning

The technical information and parts shown in this manual are not to be used for: the development, design, production, storage or use of nuclear, chemical, biological or missile weapons or other weapons of mass destruction; or military purposes; or purposes that endanger global safety and peace. Moreover, do not sell, give, or export these items, or grant permission for use to parties with such objectives. Forward all inquiries to Hitachi Ltd.



Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi Multimedia LCD Projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. When replace the lamp, to avoid burns to your fingers. The lamp becomes too hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (circuit/ballast), when turn on the projector.
4. Do not touch the exhaust fan, during operation.
5. The LCD module assembly is likely to be damaged. If replacing to the LCD/PRISM assembly, do not hold the FPC of the LCD module assembly.
6. Use the cables which are included with the projector or specified.

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Multimedia LCD Projector

August 2005 Digital Media Division

1. Features

- High Brightness
- Low Noise
- Compact Body

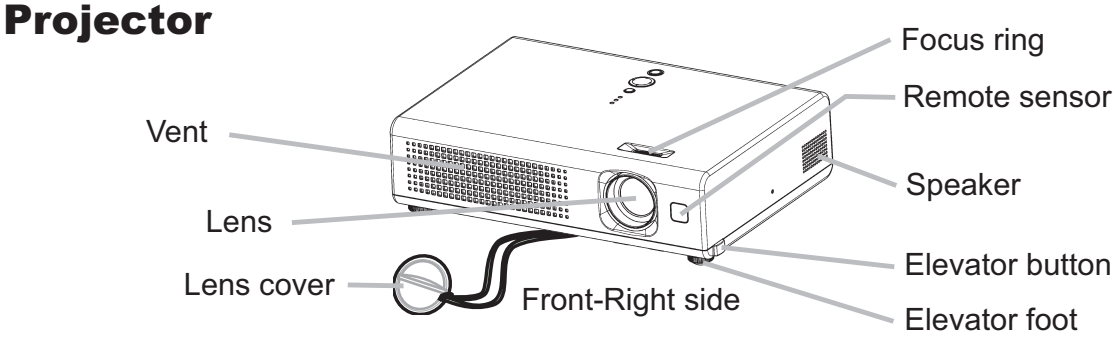
2. Specifications

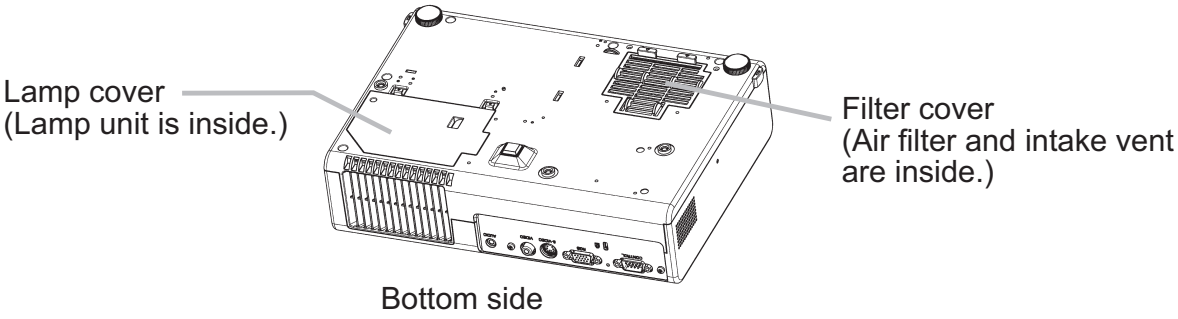
Liquid clystal panel	Drive system	TFT active matrix
	Panel size	1.4cm (0.55 type)
	Number of pixels	858 (H) x 484 (V) (Picture size with full screen is 854(H)x480(V).)
Lamp		165W UHB
RGB signal input	RGB IN	Video : Analog 0.7Vp-p(75Ω termination) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level
VIDEO signal input	VIDEO IN	1.0Vp-p(75Ω termination)
	S-VIDEO IN	Y signal : 1.0±0.1Vp-p, (75Ω termination) C signal : 0.286±0.1Vp-p(NTSC burst signal, 75Ω termination) 0.3±0.1Vp-p(PAL/SECAM burst signal, 75Ω termination)
AUDIO IN		200mVrms, 47kΩ or more (max. 3.0Vp-p)
Speaker output		1W(mono)
Power supply		AC100~120V/2.7A,AC220~240V/1.5A
Power consumption		240W
Dimensions		285 (W) x 73 (H) x 202 (D) mm (Not including protruding parts)
Weight		2.2kg(5.5lbs)
Temperature range		Operation : 5~35°C Storage : -20~60°C
Accessories		Remote control x 1 RGB cable x 1 Conponent video adapter x 1 Audio adapter x 1 Power cords x 3 Batteries x 2 Filter cover for bottom up use x 1 Lens cap x 1 Strap x 1 User's manuals ├ Operating Guide 1 x 1 ├ Operating Guide 2 x 1 └ Safety Guide x 1

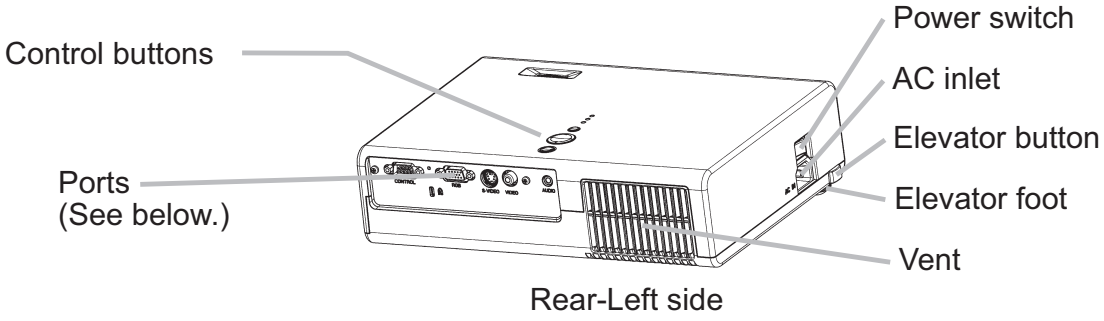
3. Names of each part

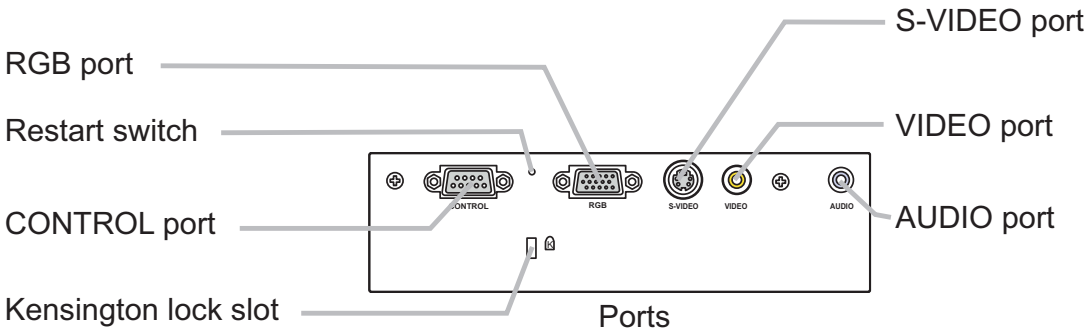
● Part names

Projector



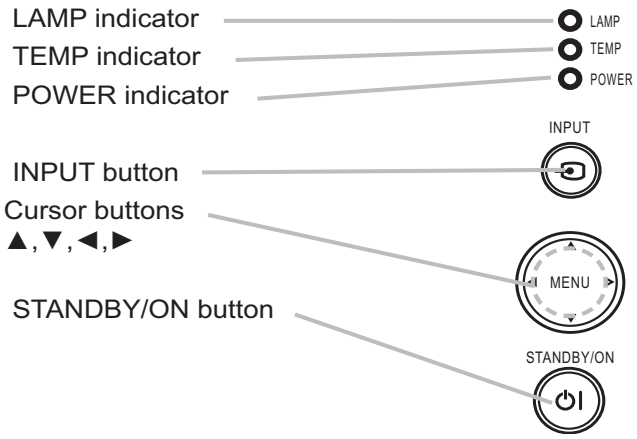




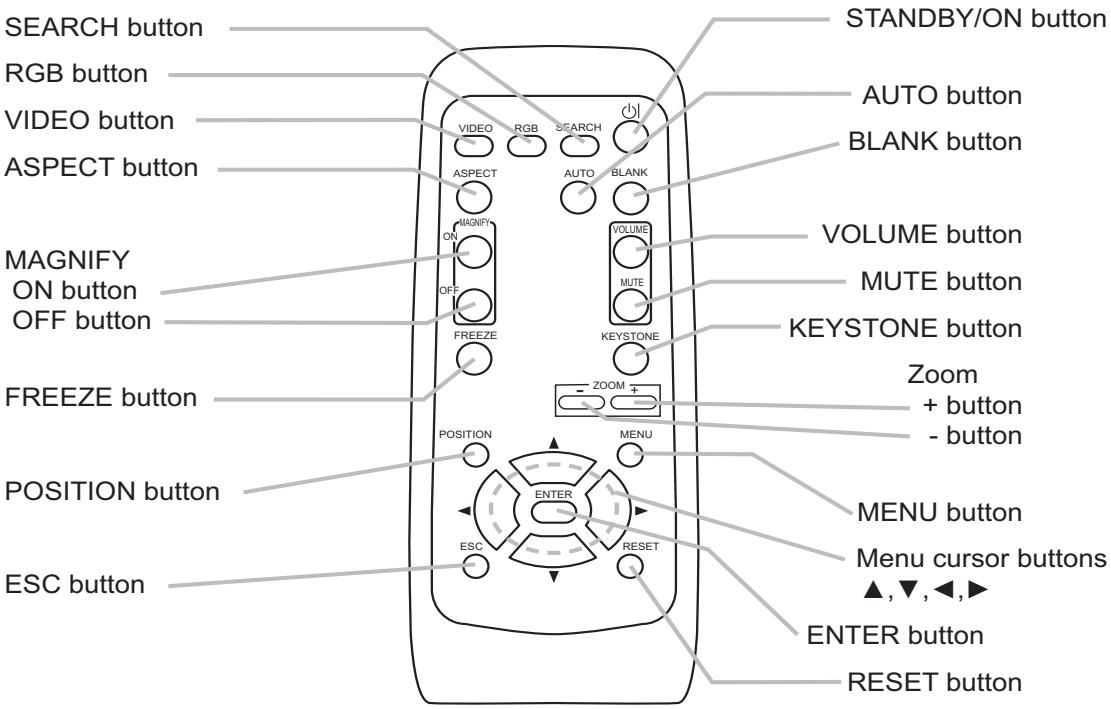


NOTE **(*) About Restart switch:** This Projector is controlled by an internal microprocessor. Under certain exceptional circumstances, the projector may not operate correctly and the microprocessor will need to be reset. In such a case, please push the Restart switch by using a cocktail stick or similar and before turning on again, make the projector cool down at least 10 minutes without operating. Only push the Restart switch in these exceptional instances.

Controls



Remote control



4. Adjustment

4-1 Before adjusting

4-1-1 Selection of adjustment

When any parts in the table 4-1 are changed, choose the proper adjusting items with the chart.

Table 4-1: Relation between the replaced part and adjustment

Replaced part	Adjustment						
	Convergence (Chap.4-2)	E-POS (Chap.4-3)	Ghost (Chap.4-4)	Flicker (Chap.4-5)	NRSH (Chap.4-6)	White balance (Chap.4-7)	Color uniformity (Chap.4-8)
Dichroic optics unit	△	△	×	○	△	△	○
LCD/LENS prism assembly	○	○	○	○	○	○	○
PWB assembly Main	○	○	○	○	○	○	○
Lamp unit assembly	×	×	△	△	×	△	△

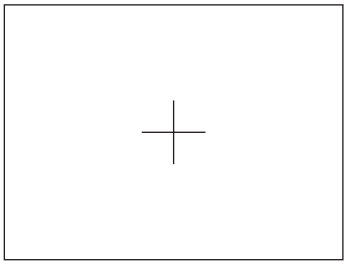
○ : means need for adjustment. × : means not need for djustment.
△ : means recommended.

4-1-2 Setting of condition before adjustment

1. Before starting adjustment, warm up projector for about 10 minutes.
2. Set Zoom Wide to Max. And project an image with more than 1m (40 inches) in diagonal size.
3. Normalizing the video adjustment
   Press the [MENU] button to display the Easy menu. If Advance menu comes up, move to the Easy menu.
   Select RESET in the Easy menu and press [▶] or [ENTER] button to open the RESET menu window. Choose EXECUTE with [▲] button.
   Note that no signal input may not allow to reset the adjustments.
4. Select PICTURE > GAMMA in the Advance menu to set to DEFAULT1.
   Note that PICTURE menu is not selectable with no signal input displayed.
5. Select PICTURE > COLOR TEMP > CUSTOM in the Advance menu, then press [▶] or [ENTER] button to display the equalizing window. Set all the values of OFFSET and GAIN in the window to zero.
   Caution: Before this performance, make a note of your customer's adjustments, because the data is overwritten.
6. Perform all adjustments from the FACTORY MENU.
   Perform the following operations to display the FACTORY MENU.
   < When you use the remote control… >
   a. Press the [MENU] button of remote control to display the Easy menu. (If the Advance menu appears, move to the Easy menu from EASY MENU.)
   b. Select the [RESET] in the Easy menu, and then press the [▶] or [ENTER] button.
   c. Next, press the [RESET] button one time. And hold the [RESET] button for 3 seconds or more (the FACTORY MENU will appear).
   < When you use the keypad… >
   a. Press the [▲]/[▼]/[◀]/[▶] button of the projector to display the Easy menu. (If the Advance menu appears, move to the Easy menu from EASY MENU.)
   b. Select the [RESET] in the Easy menu, and then press the [▶] button.
   c. Next, press the [▼] button one time. And repress and hold the [▼] button together with the [INPUT] button for 3 seconds or more (the FACTORY MENU will appear).

4-2 Convergence adjustment

Signal pattern for internal adjustment



Adjustment procedure

1. Open FACTORY MENU and then select OPTION > CNV-V. Use R and/or B so that three colors of images can be converged at center, top and bottom of the screen.
2. In the same way, select OPTION > CNV-H and use R and/or B so that three colors of images can be converged at center, left and right of the screen.

4-3 E-POS adjustment(vertical bars adjustment)

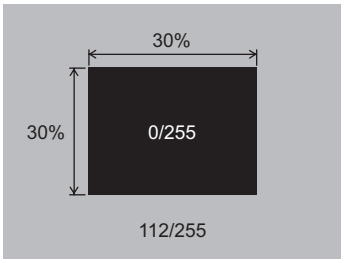
Signal pattern for internal adjustment

Adjustment procedure

1. Make this adjustment after completing the adjustment 4-2 Convergence adjustment.
2. Choose Advance menu > OPTION > SERVICE > GHOST > R,G and B, and set them to zero.
3. Open FACTORY MENU. Select DAC-P > E-POS > R and use it so that vertical bars can disappear.
4. In the same way, select DAC-P > E-POS > G and use it so that vertical bars can disappear.
5. In the same way, select DAC-P > E-POS > B and use it so that vertical bars disappear.

4-4 Ghost adjustment

Signals for internal adjustment

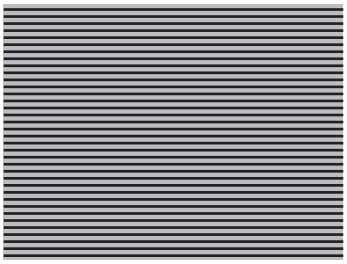


Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-3.
2. Choose Advance menu > OPTION > SERVICE > GHOST > R,G and B, and set them to zero.
3. Use DAC-P - GHOST - R: in the FACTORY MENU to adjust so that R color ghost is at a minimum. (Set the adjustment value to default, and then raise the value. When a ghost appears to the left of a black window, reduce the value by 4 steps.)
4. In the same way, use DAC-P - GHOST-G: in the FACTORY MENU to adjust so that G color ghost is at a minimum.
5. In the same way, use DAC-P - GHOST-B: in the FACTORY MENU to adjust so that B color ghost is at a minimum.

4-5 Flicker adjustment (V.COM adjustment)

Signals for internal adjustment

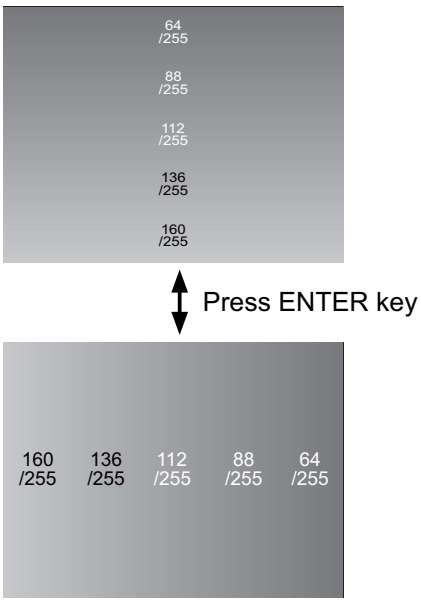


Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-4 Ghost adjustment.
2. Use DAC-P - V.COM - R: in the FACTORY MENU to adjust so that the flicker at the center of the screen is less than the flicker at the periphery. (When the flicker is about the same across the whole screen, adjust so that the flicker at the center of the screen is somewhat less than elsewhere.)
3. In the same way, use DAC-P - V.COM-G: in the FACTORY MENU to adjust the G color flicker.
4. In the same way, use DAC-P - V.COM-B: in the FACTORY MENU to adjust the B color flicker.

4-6 NRSH adjustment (vertical stripe adjustment)

Signals for internal adjustment



Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-5 Flicker adjustment.
2. Use DAC-P - NRSH - R: in the FACTORY MENU to adjust so that the vertical lines spaced every 6 dots are as inconspicuous as possible. (Reduce the adjustment value when black stripes appear in the 2nd or 3rd tone from the black side. Note that when the adjustment value is lowered, white stripes may appear in the 2nd or 3rd tone from the bright side. Should this happen, adjust so that the stripes are as inconspicuous as possible.)
3. In the same way, use DAC-P - NRSH - G: in the FACTORY MENU to adjust vertical stripes of G color.
4. In the same way, use DAC-P - NRSH - B: in the Adjustment menu to adjust vertical stripes of B color.

4-7 White balance adjustment (visual inspection)

Preparations

1. Perform these adjustments after the NRSH adjustment described in Section 4-6.
2. Reset gamma correction before adjustment.
   - Place the cursor on [GAMMA] in the FACTORY MENU, press the [RESET] key and select [DEFAULT].

Adjustment procedure

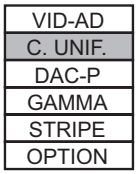
1. First, adjust the G color.
2. Select GAMMA, SUB-CNT, and G: in the FACTORY MENU. If the background is white solid, press the [ENTER] key on the Remote control transmitter to change to [G] monochrome in the 33-tone grayscale.
3. Adjust GAMMA, SUB-CNT, and G: in the FACTORY MENU so that brightness of 33 steps is best.
4. Don't adjust GAMMA, SUB-BRT, and G: in the FACTORY MENU. Because we want to keep the best contrast ratio.
5. Then adjust colors R and B.
6. Select GAMMA, SUB-CNT, and R: and B: in the FACTORY MENU. If the background is white solid, press the [ENTER] key on the Remote control trasmitter to change to [W] monochrome in the 33-tone grayscale.
7. Adjust GAMMA, SUB-BRT, R: and B: in the FACTORY MENU so that low-brigtness white balance is best.
8. Adjust GAMMA, SUB-CNT, R: and B: in the FACTORY MENU so that middle-brightness white balance is best.
9. Repeat steps 7 to 8 above, and adjust so that brightness white balance of 33 steps is best.

4-8 Color uniformity adjustment

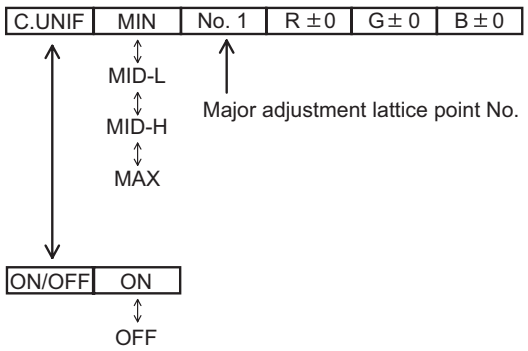
Preparations

1. Perform these adjustments after the white balance adjustment described in Section 4-7.
2. Make a color uniformity adjustment for the following four tones.
   - MIN tone (approx. 4% input signal)
   - MID-L tone (approx. 14% input signal)
   - MID-H tone (approx. 25% input signal)
   - MAX tone (approx. 57% input signal)
3. Place the cursor on [C.UNIF.] in the FACTORY MENU and press the [▶] key. This displays the Adjust Tone menu at the bottom of the screen. To choose the tone to be adjusted, press the [▶] key and then use the [▲] or [▼] key. Select the major adjustment lattice point No. and color, and then adjust them.
4. The major adjustment lattice point numbers (a total of 17 points) corresponds to the major adjustment lattice point positions in the diagram on the right. The color uniformity of the entire screen can be adjusted by adjusting the white balance for each of the points starting in order from the low numbers.
5. Adjustment point No.1 should not be adjusted, because it controls the brightness of the entire screen.
6. To temporarily turn correction off, place the cursor on [C.UNIF.] in the Adjust Tone menu and press the [▼] key. The ON/OFF menu appears. Place the cursor on [ON] with the [▶] key and press the [▼] key. To turn it on again, place the cursor on [OFF] and press the [▲] key.
7. Although this adjustment can also be made using internal signals, we will here use the [ENTER] key on the Remote control transmitter to select the following two signals.
   - Solid monochrome adjustment color (use G color adjustment when a color differential meter is used).
   - Solid white (use for adjustment other than above).
8. Reset color-shading correction before adjustment.
   - When 4 tones and all colors are to be reset, place the cursor on [C.UNIF.] in the FACTORY MENU, press the [RESET] key and select [DEFAULT].
   - When only 1 tone is to be reset, place the cursor on the tone to be reset, press the [RESET] key and select [DEFAULT].
   - Single tone and monochrome resets cannot be performed.

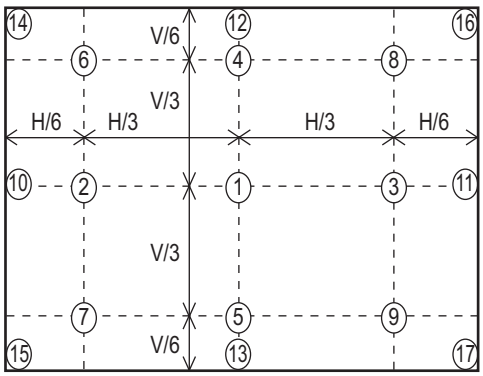
FACTORY MENU



Adjust tone menu



Major adjustment lattice point position



Adjustment procedure 1

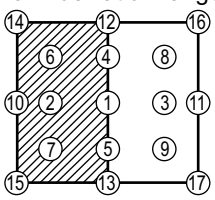
(When a color differential meter is used)

1. First adjust [MID-L] tone [G:].
2. Select adjustment point [No.2][G:].
   When the background is not [G] monochrome, press the [ENTER] key on the Remote control transmitter to change to solid [G] monochrome.
3. Measure the illumination at adjustment points No. 2, No.3, No.10 and No.11.
   The values should be:
   No.2 = Y2 [lx] No.10 = Y10 [lx]
   No.3 = Y3 [lx] No.11 = Y11 [lx]
4. No.2 and No.3 adjustment point have the average of Y2 and Y3.
   Y2 = (Y2 + Y3) / 2 ± 2 [%]
   Y3 = (Y2 + Y3) / 2 ± 2 [%]
5. No.10 and No.11 adjustment point have the average of Y10 and Y11.
   Y10 = (Y10 + Y11) / 2 ± 2 [%]
   Y11 = (Y10 + Y11) / 2 ± 2 [%]
6. Then adjust [MID-L] tone [R] and [B].
   When the background is [G] monochrome, press the [ENTER] key on the Remote control transmitter to change to solid white.
7. Measure the color coordinates of adjustment point [No.1] and make a note of them.
   Assume that they are x = x1, y = y1.
   Note: When the CL-100 color and color difference meter is used, the [Δ](delta) mode is convenient. When adjustment point [No.1] color coordinate has been selected, set the slide switch on the side to [Δ](delta) while holding down the [F] button on the front panel. The measurement shown after this displays the deviation from measurement point 1.
8. Measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
   x = x1 ± 0.005 , y = y1 ± 0.010
9. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
   This completes adjustments required for [MIN].
   Note: Since excessive correction may lead to a correction data overview during internal calculations, use the following values for reference.
   [No.2] to [No.5] ± 40 or less
   [No.6] to [No.9] ± 50 or less
   [No.10] to [No.13] ± 70 or less
   [No.14] to [No.17] ± 120 or less
10. Then adjust [MIN] tone [G] so that the adjustment data set two times as much as [MID-L] tone [G].
    This completes [G] color adjustments.
11. Then adjust [MIN] tone [R] and [B].
    Select [No.2] [B:] and press the [ENTER] key on the Remote control transmitter to change to solid white.
12. Measure the color coordinates of adjustment point [No.1] and make a note of them.
    Assume that they are x = x1, y = y1.
13. Now measure the color coordinates of measurement point [No.2] and adjust [No.2][R:] and [B:] so that the coordinates are as follows.
    x = x1 ± 0.005 , y = y1 ± 0.010 (Target)
    x = x1 ± 0.020 , y = y1 ± 0.040
14. Similarly, measure adjustment points [No.3] to [No.17] and adjust their color coordinates starting in order from the small number points.
    This completes [MIN] tone adjustments.
15. Now make similar adjustments for [MID-H] tone.
    (Adjust [MID-H] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)
16. Now make similar adjustments for [MAX] tone.
    (Adjust [MAX] tone [G] so that the adjustment data set half as many as [MID-L] tone [G].)

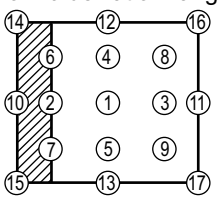
Adjustment procedure 2
(visual inspection)

1. First adjust [MIN] tone [G:].
2. Select [No.2] [G:].
   If the background is [G] monochrome, press the [ENTER] key on the Remote control transmitter to change to solid white.
3. View measurement point [No.2] and [No.3].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1].
4. View measurement point [No.10] and [No.11].
   Lower the [G] color intensity only of the color point whose [G] color is more intense than measurement point [No.1], and raise the intensity of the point whose color intensity is lower than measurement point [No.1].
5. Now adjust the [MIN] tone for colors [R] and [B].
6. View measurement points [No.2], [No.3], [No.10] and [No.11]. Adjust the [R] and [B] of each measurement point so that they have the same color as measurement point [No.1].
   Adjustment technique:
   First, adjust [B:] of the point whose color is to be adjusted so that it approximates that of [No.1]. If [R:] is low at this time, the image will have cyan cast, in which case [R:] is increased. On the other hand, if [R:] is excessive, the image will have a magenta cast, in which case [R:] is decreased.
   Overall, a cyan cast makes it easy to see color shading.
7. Next, view measurement points [No.4], [No.5], [No.12], [No.13] and make similar adjustments.
8. Then adjust measurement points [No.6], [No.7], [No.8], [No.9], [No.14], [No.15], [No.16] and [No.17]. This completes the [MIN] tone adjustments.
9. Make similar another three tones as described in steps 1 to 8 above.

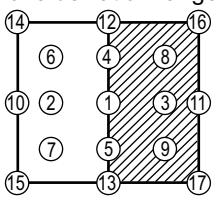
No. 2 deviation range



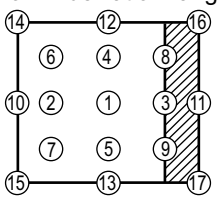
No. 10 deviation range



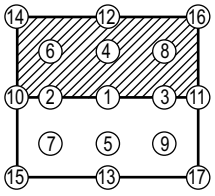
No. 3 deviation range



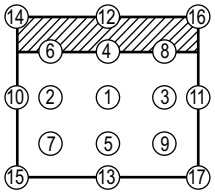
No. 11 deviation range



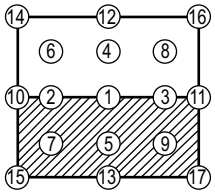
No. 4 deviation range



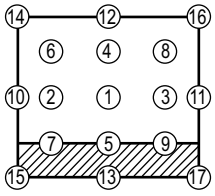
No. 12 deviation range



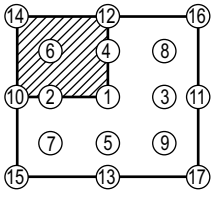
No. 5 deviation range



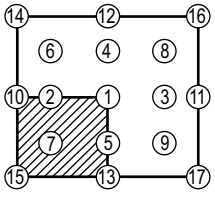
No. 13 deviation range



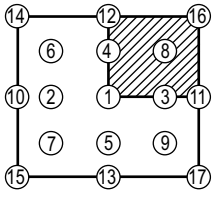
No. 6 deviation range



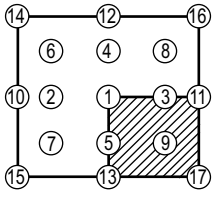
No. 7 deviation range



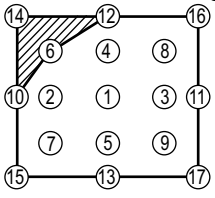
No. 8 deviation range



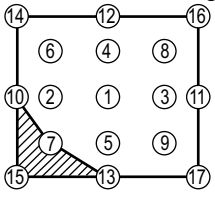
No. 9 deviation range



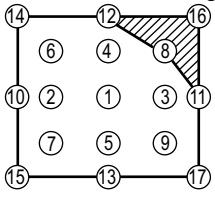
No. 14 deviation range



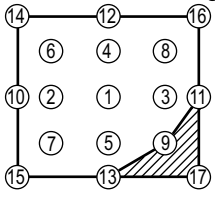
No. 15 deviation range



No. 16 deviation range



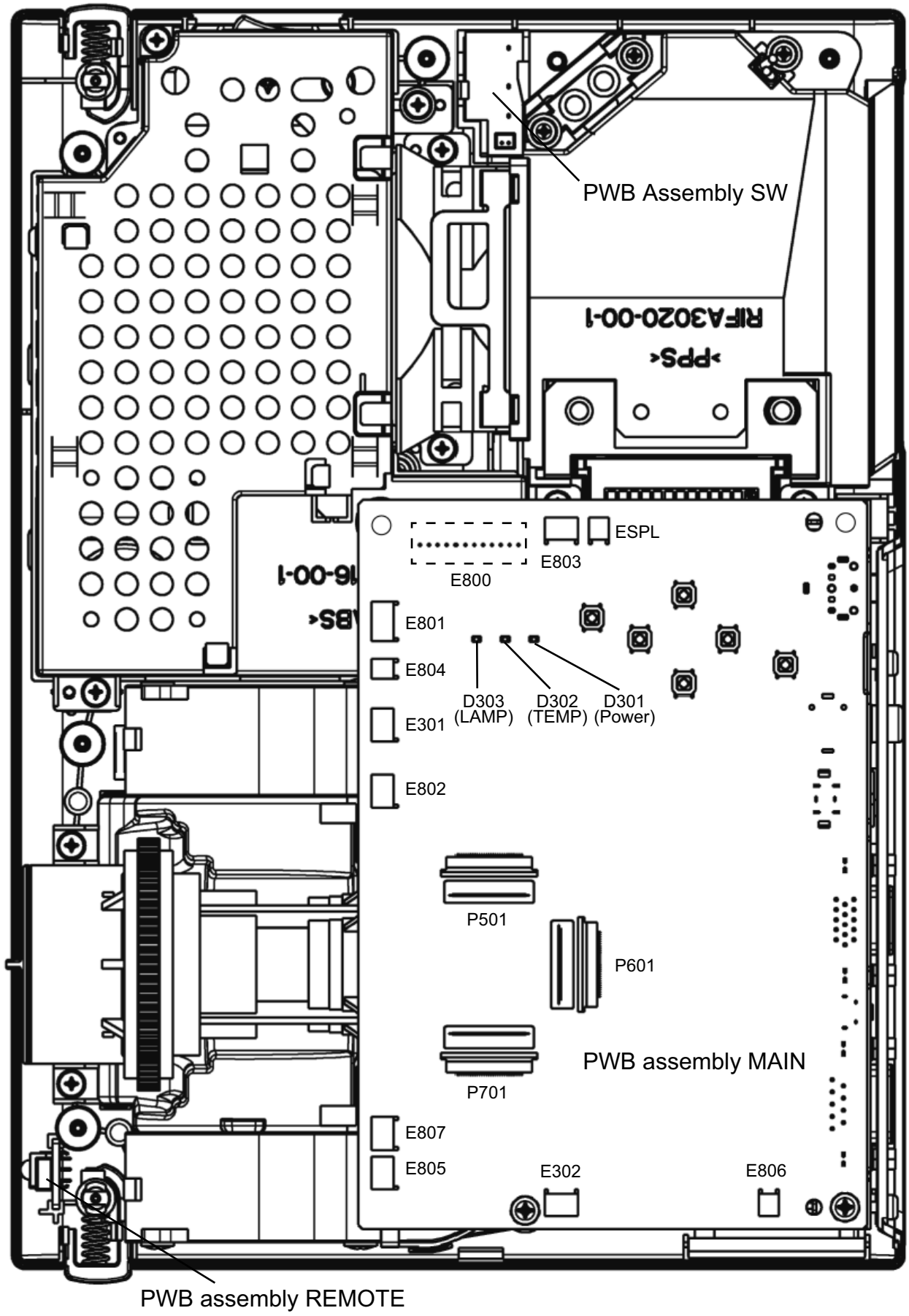
No. 17 deviation range

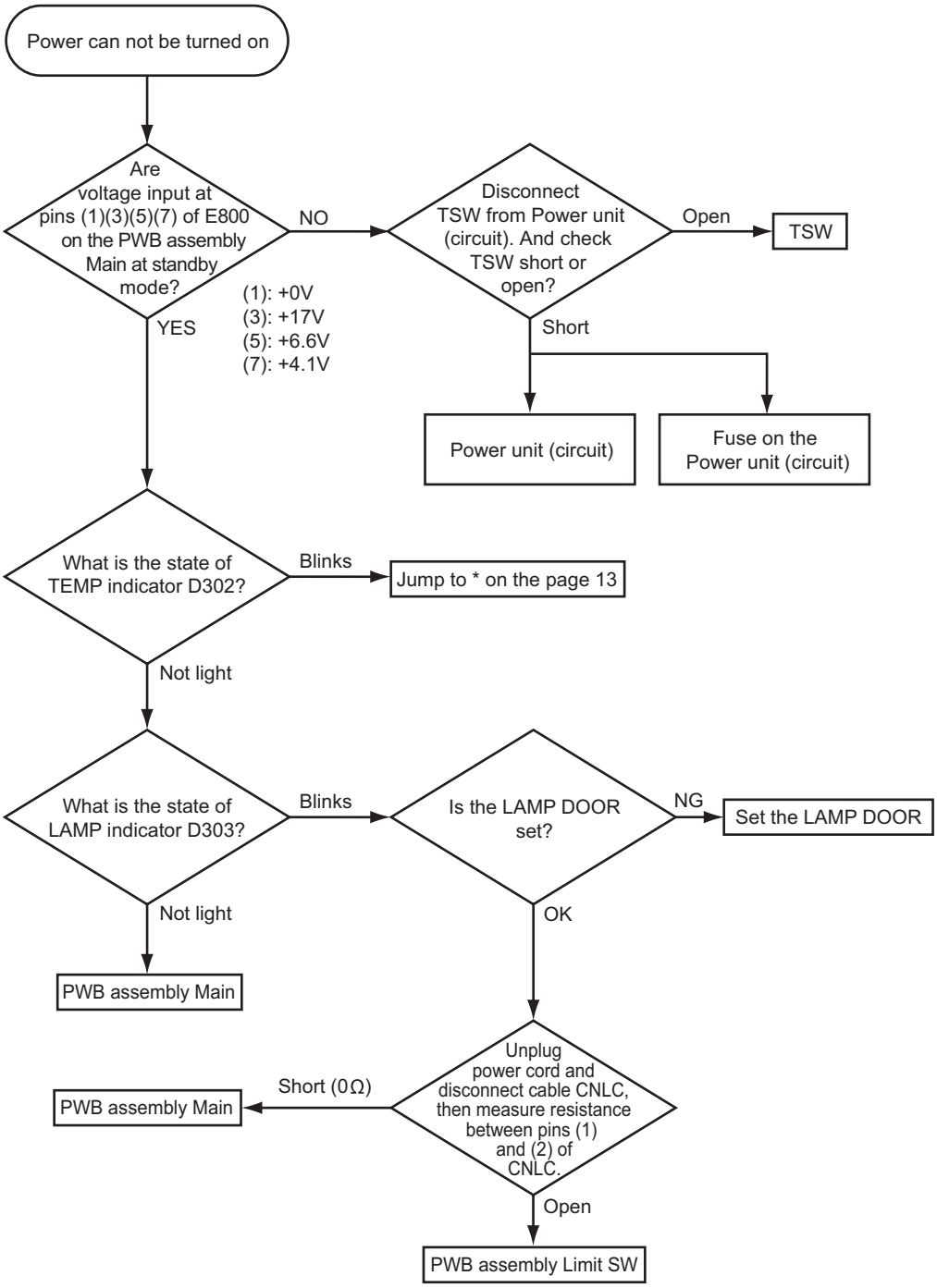


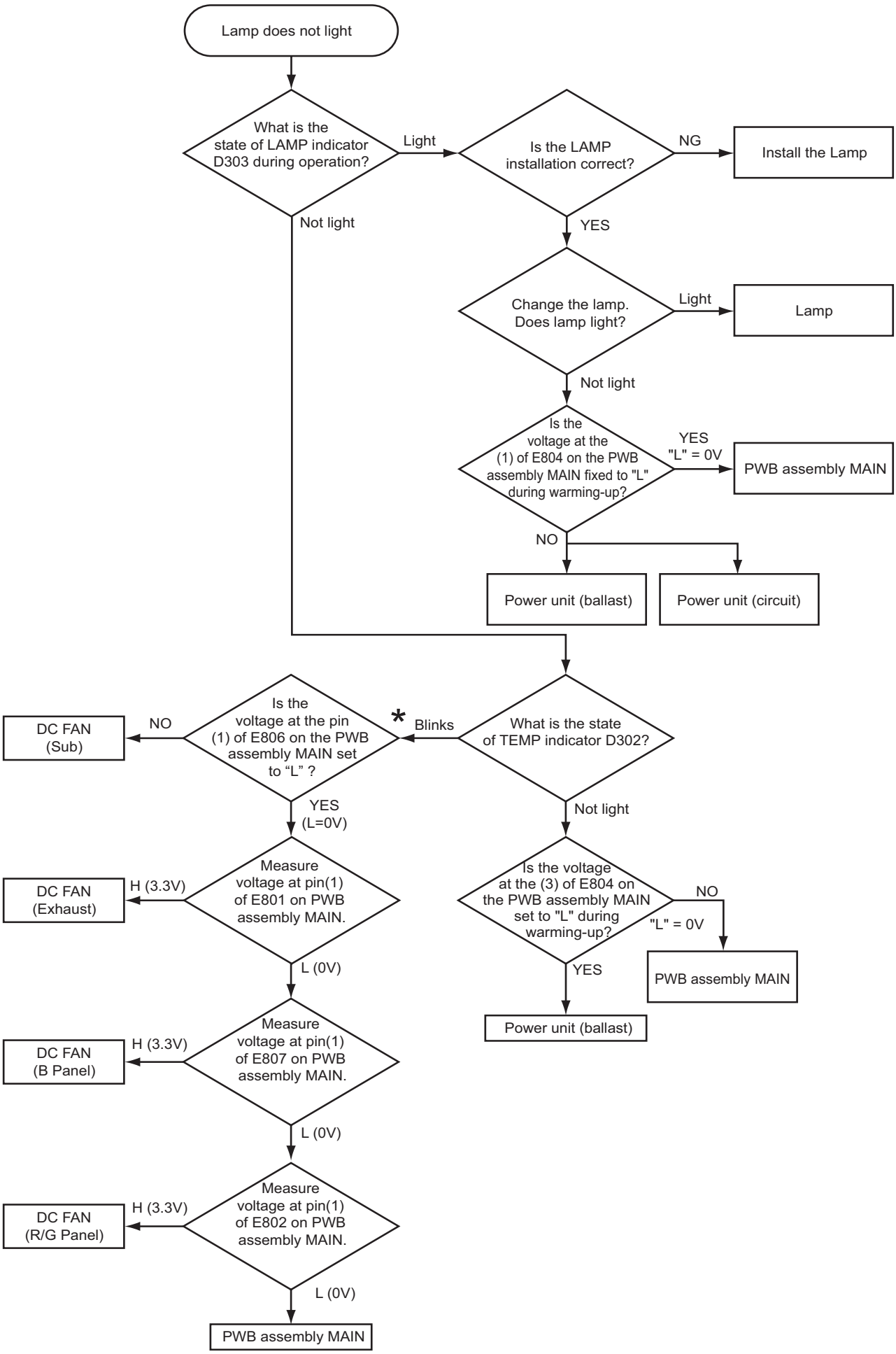
5. Troubleshooting

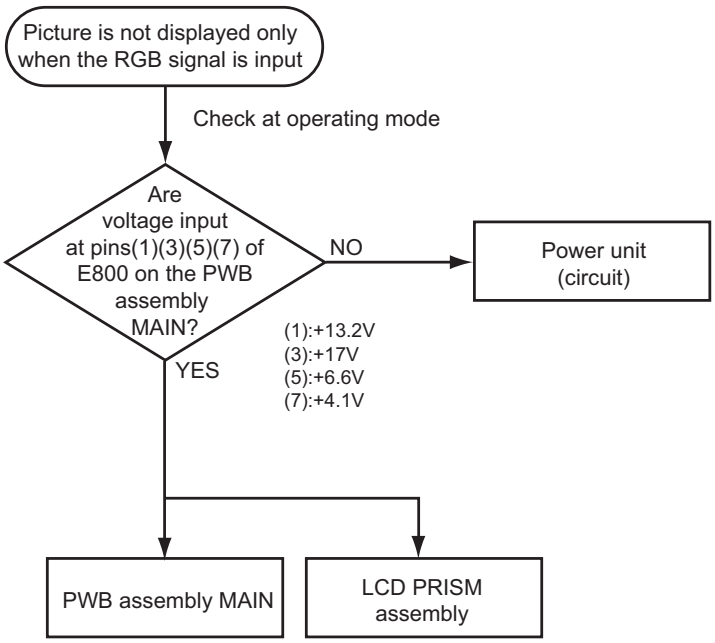
Check points

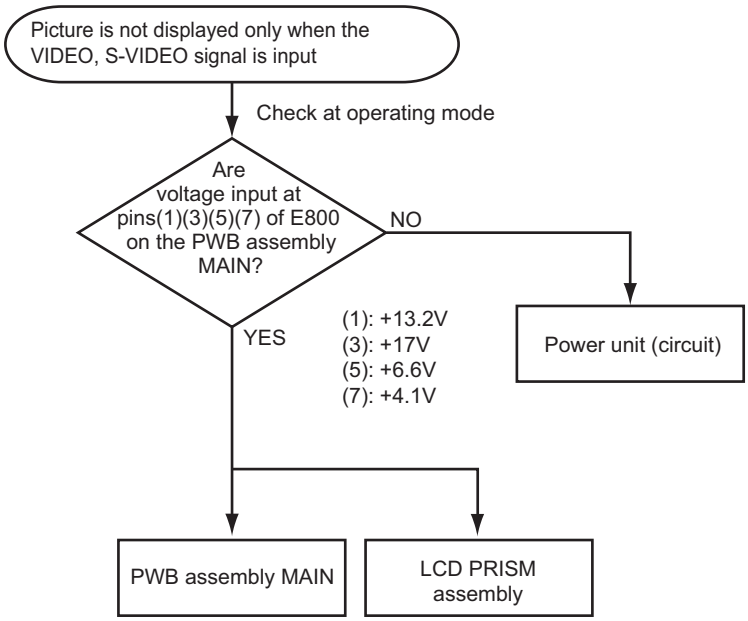
*Top view of the projector after the silver gilding on the lamp house detached.

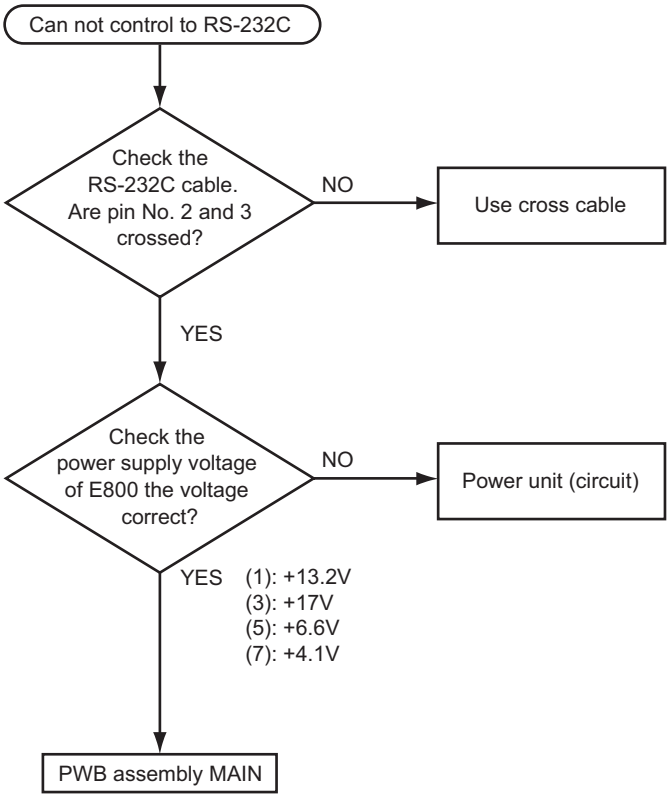



Power can not be turned on
Are voltage input at pins (1)(3)(5)(7) of E800 on the PWB assembly Main at standby mode?
NO
Disconnect TSW from Power unit (circuit). And check TSW short or open?
Open
TSW
(1): +0V
(3): +17V
(5): +6.6V
(7): +4.1V
YES
Short
Power unit (circuit)
Fuse on the Power unit (circuit)
What is the state of TEMP indicator D302?
Blinks
Jump to * on the page 13
Not light
What is the state of LAMP indicator D303?
Blinks
Is the LAMP DOOR set?
NG
Set the LAMP DOOR
Not light
OK
PWB assembly Main
Unplug power cord and disconnect cable CNLC, then measure resistance between pins (1) and (2) of CNLC.
Short (0Ω)
PWB assembly Main
Open
PWB assembly Limit SW


Lamp does not light
What is the state of LAMP indicator D303 during operation?
Light
Is the LAMP installation correct?
NG
Install the Lamp
Not light
YES
Change the lamp. Does lamp light?
Light
Lamp
Not light
Is the voltage at the (1) of E804 on the PWB assembly MAIN fixed to "L" during warming-up?
YES "L" = 0V
PWB assembly MAIN
NO
Power unit (ballast)
Power unit (circuit)
What is the state of TEMP indicator D302?
*
Blinks
Is the voltage at the pin (1) of E806 on the PWB assembly MAIN set to “L” ?
NO
DC FAN (Sub)
YES (L=0V)
Measure voltage at pin(1) of E801 on PWB assembly MAIN.
H (3.3V)
DC FAN (Exhaust)
L (0V)
Measure voltage at pin(1) of E807 on PWB assembly MAIN.
H (3.3V)
DC FAN (B Panel)
L (0V)
Measure voltage at pin(1) of E802 on PWB assembly MAIN.
H (3.3V)
DC FAN (R/G Panel)
L (0V)
PWB assembly MAIN
Not light
Is the voltage at the (3) of E804 on the PWB assembly MAIN set to "L" during warming-up?
NO
"L" = 0V
PWB assembly MAIN
YES
Power unit (ballast)

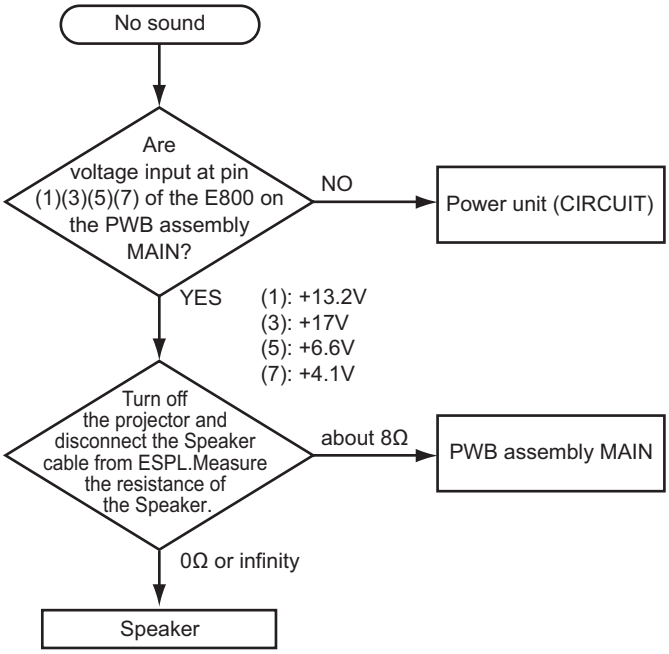

Picture is not displayed only when the RGB signal is input
Check at operating mode
Are voltage input at pins(1)(3)(5)(7) of E800 on the PWB assembly MAIN?
NO
Power unit (circuit)
YES
(1):+13.2V
(3):+17V
(5):+6.6V
(7):+4.1V
PWB assembly MAIN
LCD PRISM assembly


Picture is not displayed only when the VIDEO, S-VIDEO signal is input
Check at operating mode
Are voltage input at pins(1)(3)(5)(7) of E800 on the PWB assembly MAIN?
NO
Power unit (circuit)
YES
(1): +13.2V
(3): +17V
(5): +6.6V
(7): +4.1V
PWB assembly MAIN
LCD PRISM assembly



The check after parts change

1. PC power supply OFF
2. Connection of cable
3. Projector starting
4. PC starting
   *When not operating :
   PC set up change of cable.



6. Service points

6-1 Lead free solder [CAUTION]

This product uses lead free solder (unleaded) to help preserve the environment. Please read these instructions before attempting any soldering work.

⚠ CAUTION
Always wear safety glasses to prevent fumes or molten solder from getting into the eyes. Lead free solder can splatter at high temperatures (600˚C).

■ Lead free solder indicator

Printed circuit boards using lead free solder are engraved with an "F" or "LF".

■ Properties of lead free solder

The melting point of lead free solder is 40-50˚C higher than leaded solder.

■ Servicing solder

Solder with an alloy composition of Sn-3.0Ag-0.5Cu or Sn-0.7Cu is recommended.

Although servicing with leaded solder is possible, there are a few precautions that have to be taken. (Not taking these precautions may cause the solder to not harden properly, and lead to consequent malfunctions.)

Precautions when using leaded solder

- Remove all lead free solder from soldered joints when replacing components.
- If leaded solder should be added to existing lead free joints, mix in the leaded solder thoroughly after the lead free solder has been completely melted (do not apply the soldering iron without solder).

■ Servicing soldering iron

A soldering iron with a temperature setting capability (temperature control function) is recommended.

The melting point of lead free solder is higher than leaded solder. Use a soldering iron that maintains a high stable temperature (large heat capacity), and that allows temperature adjustment according to the part being serviced, to avoid poor servicing performance.

Recommended soldering iron:

- Soldering iron with temperature control function (temperature range: 320-450˚C)

Recommended temperature range per part:

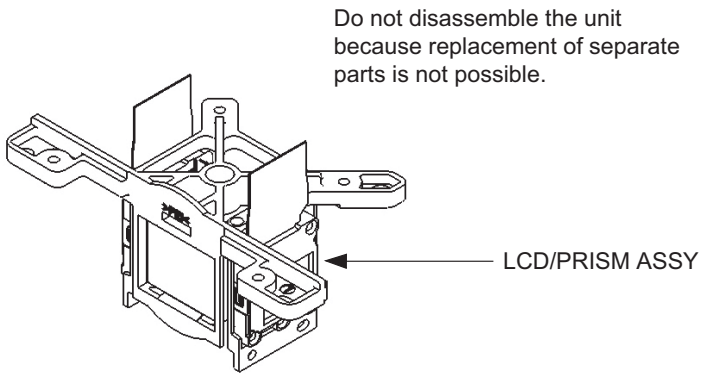
Part	Soldering iron temperature
Mounting (chips) on mounted PCB	320˚C±30˚C
Mounting (chips) on empty PCB	380˚C±30˚C
Chassis, metallic shield, etc.	420˚C±30˚C

The PWB assembly which has used lead free solder

(1) PWB assembly MAIN
(2) PWB assembly REMC
(3) PWB assembly SW
(4) POWER UNIT (BALLAST)
(5) POWER UNIT (CIRCUIT)

6-2 Replacing The LCD/PRISM assembly

You should not replace separately the parts of the LCD/PRISM assembly. In case of a failure in any parts of LCD/PRISM assembly, replace the whole LCD/PRISM assembly.



6-3 Cleaning up dust from panels and optical filters

⚠WARNING

Wear sunglasses to protect your eyes when you maintain the projector with its lamp on.

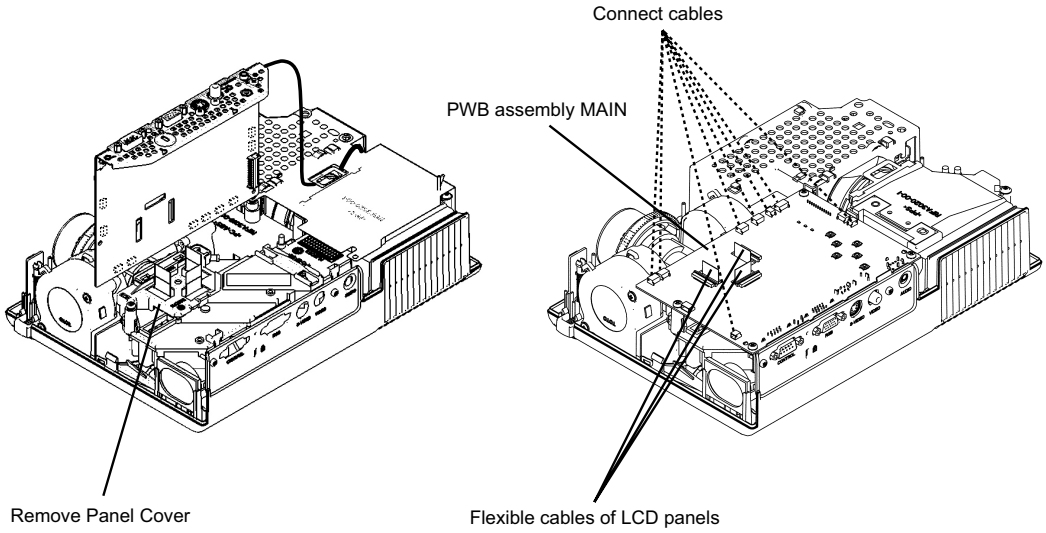
1. Preparation

Please prepare cleaning tools and materials as follows. And prepare relatively clean room not to work in additional dust, while removing operation.

(1) Swab for cleaning : P#: NX08061, "Cotton stick L147"
(2) Air duster (Dust blower, spray can)
(3) Vacuum cleaner

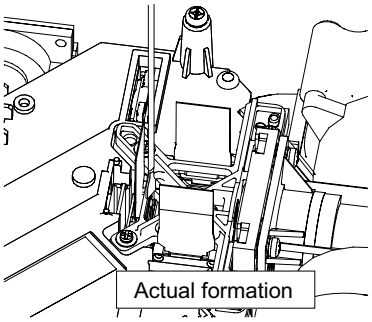
2. Disassemble and open the maintenance hole.

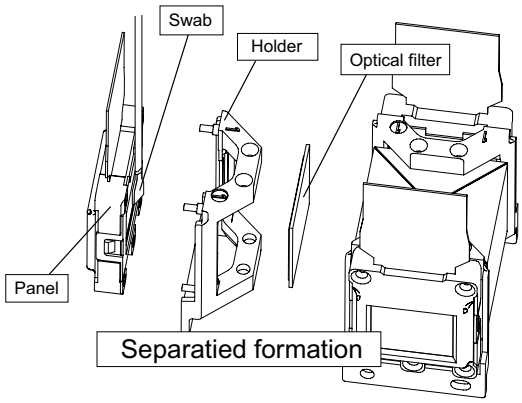
(1) Turn off the projector, and unplug the power cord.
(2) Remove the top cover, according to the notice 1 of chapter 8.
(3) Remove the PWB assembly MAIN, according to the notice-2 of the chapter 8.
(4) Remove the Panel Cover.



(5) Attach the PWB assembly MAIN in original place, and connect cables indicated above. Note that flexible cables of LCD panels should come to the upper portion of PWB assembly MAIN, but don't connect them to the connectors. Make sure that flexible cables' terminals don't touch to any other parts during maintenance, especially when the projector is turned on.

3. Maintenance point



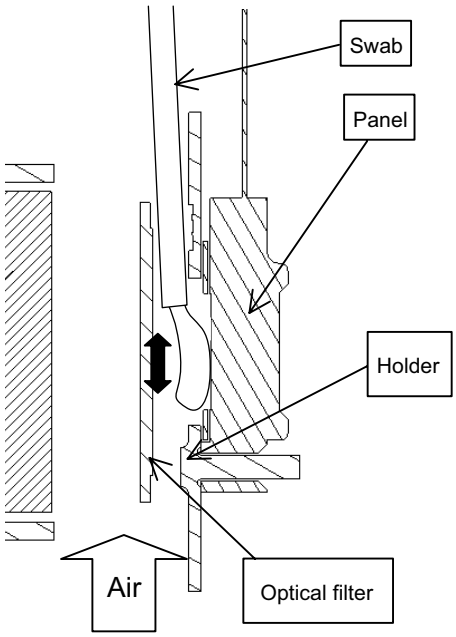


Each color part has same construction.
By using swab and air duster, you can easily remove dust from panel and optical filter.

4. Cleaning the panels and optical filters

(1) Turn on the set and lit on the lamp.

(2) By using swab and air duster, remove the dust. Insert swab through holes of MAIN board, and wipe LCD Panels. Focusing dust makes you check the dust on screen.



- While removing the dust, separated dust will be blown off by air cooling system.
- Please pay attention not to damage panel and optical filter.

5. Re-assembly

(1) Turn off the set and remove the PWB assembly MAIN.

(2) Set the Panel cover so that stress is not put on flexible cables of LCD panels.

(3) Attach the PWB assembly MAIN in place, and connect cables to connectors of it.

(4) Re-assemble the set.

(5) While re-assembling, please clean the Panel cover and intake filter and filter cover by using vacuum cleaner.

6-4 Cleaning up dust from multilens

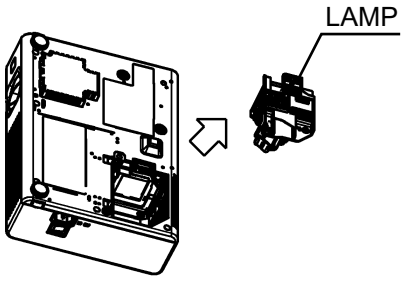
1. Preparation

Please prepare cleaning tools and materials as follows.

(1) Air duster (Dust blower, spray can)

(2) Swab for cleaning ; P#NX08061, ”Cotton stick L147”

(3) Vacuum cleaner

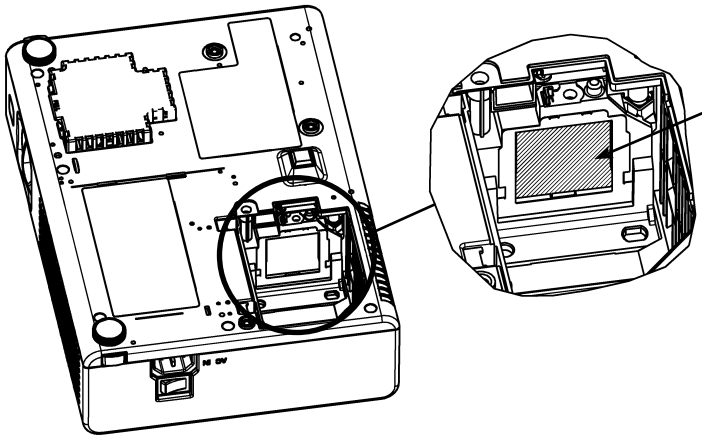


2. Remove the lamp door and the lamp assy.

(1) Turn off the projector, and unplug the power cord.

(2) Remove the lamp door and the lamp assembly according to the description of chapter “Replacing the LAMP”.

3. Maintenance point



multilens surface

Removeing the lamp shows the part multilens positioned vertically. Wipe the whole of the multilens surface using the sweb.

CAUION :

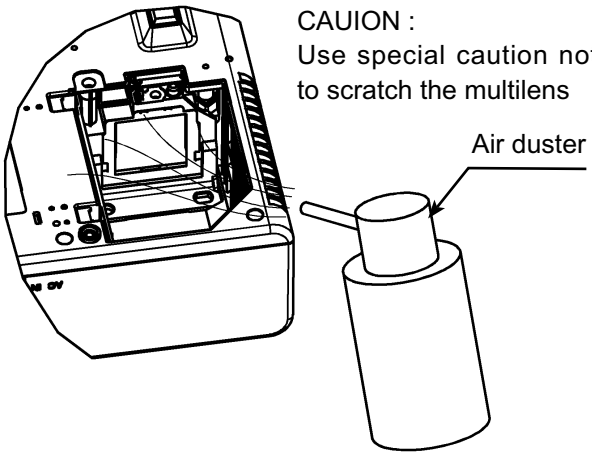
Use special caution not to damage the multilens

4. Cleaning the multilens

(1) By using the air duster, remove the dust on multilens.

(2) Wipe the surface of multilens by using swab.

By using the air duster, remove the dust in multilens



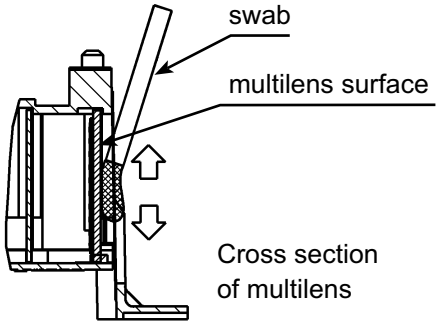
CAUION :

Use special caution not to scratch the multilens

Air duster

CAUION :

Use special caution not to scratch the multilens



5. Attach the lamp door and the lamp assembly.

Attach the lamp door and the lamp assembly accoding the description of “Replacing the LAMP”.

6-5 Putting batteries

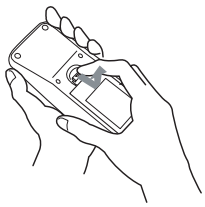
⚠ WARNING

Always handle the batteries with care and use them only as directed. Improper use may result in battery explosion, cracking or leakage, which could result in fire, injury and/or pollution of the surrounding environment.

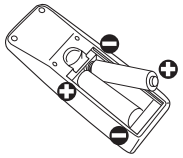
- Be sure to use only the batteries specified. Do not use batteries of different types at the same time. Do not mix a new battery with used one.
- Make sure the plus and minus terminals are correctly aligned when loading a battery.
- Keep a battery away from children and pets.
- Do not recharge, short circuit, solder or disassemble a battery.
- Do not allow a battery in a fire or water. Keep batteries in a dark, cool and dry place.
- Do not give the battery a physical impact.
- If you observe a leakage of a battery, wipe out the flower and then replace a battery. If the flower adheres your body or clothes, rinse well with water immediately.
- Obey the local laws on disposing a battery.

To use the remote control, please load the batteries. Whenever the remote control starts to malfunction, replace the batteries. If you won't use the remote control for an extended period, remove the batteries from the remote control and store them in a safe place.

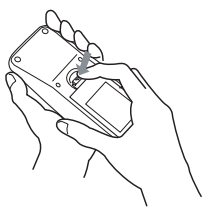
1. Remove the battery cover.
   Slide back and remove the battery cover in the direction of the arrow.



2. Take old batteries out and/or put new batteries in.
   When putting in batteries, align and insert the two AA batteries according to their plus and minus terminals as indicated in the remote control.



3. Close the battery cover.
   Replace the battery cover in the direction of the arrow and snap it back into place.



6-6 Air filter

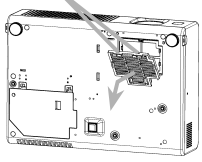
⚠ WARNING
●Before caring, make sure the power switch is off and the power cable is not plugged in, then allow the projector to cool sufficiently. The care in a high temperature state of the projector could cause an electric shock, a burn and/or malfunction to the projector. ●Use only the air filter of the specified type. Do not use the projector with the air filter and the filter cover removed. Do not remove the filter cover and the air filter in a smoky or dusty place. It could result in a fire and/or malfunction to the projector. ●The air filter should be cleaned periodically. If the air filter becomes clogged by dust or the like, internal temperatures rise and could cause a fire, a burn and/or malfunction to the projector.
⚠ CAUTION
●Please be careful for the projector not to fall. While the projector is placed lens-side up, hold the projector.

If the air filter becomes clogged by dust or the like, internal temperatures rise and could cause a fire, a burn and/or malfunction to the projector.When the indicators or a message prompts you to clean the air filter, clean the air filter as soon as possible. Please check and clean the air filter periodically, even if there is no message.
Please replace the air filter when it is damaged or too soiled. Preparation of a new air filter is recommended.
When you replace the lamp, please replace the air filter. An air filter of specified type will come together with a replacement lamp for this projector.

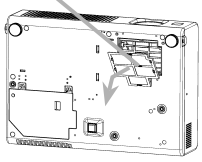
1. Turn the projector off, and unplug the power cord. Allow the lamp to cool sufficiently.
2. When the projector is suspended from the ceiling, apply the vacuum cleaner to and around the filter cover first, to prevent of dust or the like.
3. Disconnect all the connectors and adapters that were connected to the projector's ports. Then slowly turn the projector so that the lens-side is facing up. While the projector is placed lens-side up, hold the projector.
4. Remove the filter cover and the air filter. Then slowly turn the projector, so that the bottom is facing up.

Usual filter cover

(1) Remove the filter cover.
Hold the knobs while pulling out it.



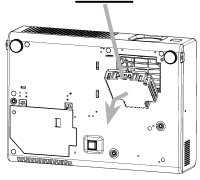
(2) Remove the air filter.
Hold the knob while pulling out it.



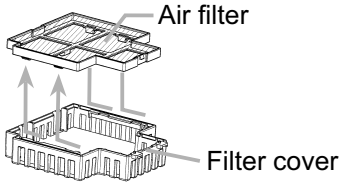
(3) Slowly turn the projector bottom up.

Filter cover for bottom-up use

(1) Remove the filter cover.
Hold the knob while pulling out it.



(2) Slowly turn the projector bottom up.
(3) Remove the air filter from the filter cover.

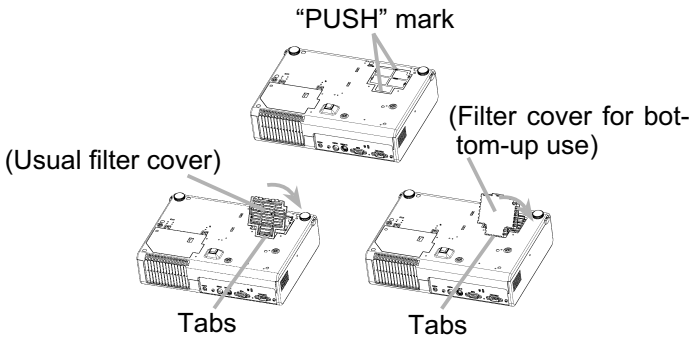


5. Apply a vacuum cleaner to the vent of the projector for the air filter, the air filter and filter cover.
Please replace the air filter when it is damaged or too soiled.

6. Position the air filter and filter cover into place.

(1) Set an air filter into place.
Push the points of “PUSH” mark.

(2) Interlocking the tabs, snap the cover into place.



7. Please reposition and reconnect the projector, to return as before.
Then turn the projector on.
8. Reset the filter time using the FILTER TIME function in the OPTION menu.
(1) Press the MENU button to display a menu.
When the EASY MENU has appeared, please skip the next step (2).
(2) Point at the “OPTION” in the left column of the menu using ▼/▲ button, then press the ► button.
(3) Point at the ”FILTER TIME” using ▼/▲ button, then press the ► button. A dialog will appear.
(4) Press the ▲ button to select “RESET” on the dialog. It performs resetting the filter time.

NOTE

- Please replace the air filter when it is damaged or too soiled, and also when you replace the lamp.
- Please reset the filter time only when you have cleaned or replaced the air filter, for a suitable indication about the air filter.
- The projector may display the message such as “CHECK THE AIR FLOW” or turn off the projector, to prevent the internal heat level rising.

6-7 Lamp

⚠ WARNING	HIGH VOLTAGE	HIGH TEMPERATURE	HIGH PRESSURE

• The projector uses a high-pressure mercury glass lamp. The lamp can break with a loud bang, or burn out, if jolted or scratched, handled while hot, or worn over time. Note that each lamp has a different lifetime, and some may burst or burn out soon after you start using them. In addition, when the bulb bursts, it is possible for shards of glass to fly into the lamp housing, and for gas containing mercury to escape from the projector's vent holes.

● **About disposal of a lamp** • This product contains a mercury lamp; do not put it in a trash. Dispose of it in accordance with environmental laws.
For lamp recycling, go to www.lamprecycle.org. (in the US)
For product disposal, contact your local government agency or www.eiae.org (in the US) or www.epsc.ca (in Canada).

Disconnect the plug from the power outlet

• If the lamp should break (it will make a loud bang when it does), unplug the power cord from the outlet. Note that shards of glass could damage the projector's internals, or cause injury during handling.
• If the lamp should break (it will make a loud bang when it does), ventilate the room well, and make sure not to breathe the gas that comes out of the projector vents, or get it in your eyes or mouth.
• Before replacing the lamp, turn the projector off and unplug the power cord, then wait at least 45 minutes for the lamp to cool sufficiently. Handling the lamp while hot can cause burns, as well as damaging the lamp.

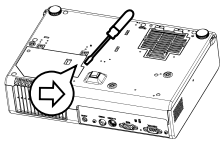
• Never unscrew except the appointed (marked by an arrow) screws.
• Do not open the lamp cover while the projector is suspended from above. This is dangerous, since if the lamp's bulb has broken, the shards will fall out when the cover is opened. In addition, working in high places is dangerous.
• Do not use the projector with the lamp cover removed. At the lamp replacing, make sure that the screws are screwed in firmly. Loose screws could result in damage or injury.

• Use only the lamp of the specified type.
• If the lamp breaks soon after the first time it is used, it is possible that there are electrical problems elsewhere besides the lamp.
• Handle with care: jolting or scratching could cause the lamp bulb to burst during use.
• Using the lamp for long periods of time, could cause it dark, not to light up or to burst. When the pictures appear dark, or when the color tone is poor, please replace the lamp as soon as possible. Do not use old (used) lamps; this is a cause of breakage.

● Replace the Lamp

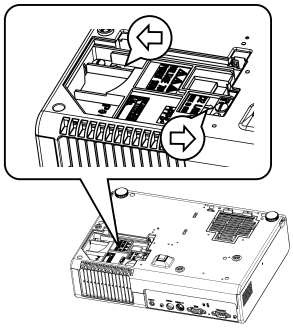
A lamp has a finite product life. Using the lamp for long periods of time could cause the pictures darker or the color tone poor. Note that each lamp has a different lifetime, and some may burst or burn out soon after you start using them.
Preparation of a new lamp and early replacement are recommended.

1. Turn the projector off, and unplug the power cord. Allow the lamp to cool for at least 45 minutes.
2. Prepare a new lamp.
   If the projector is mounted on the ceiling, or if the lamp has broken.

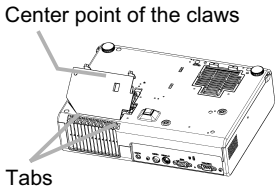


In the case of replacement by yourself,

3. After making sure that the projector has cooled adequately, slowly turn over the projector, so that the bottom is facing up.
4. Please loosen the screw (marked by arrow). Then, unhook the claws of the lamp cover and remove the lamp cover.
5. Loosen the 2 screws (marked by arrow) of the lamp, and slowly pick up the lamp by the handles.
   Please be careful in handling the lamp. Breaking the lamp could cause an injury and an escape of gas containing mercury.
6. Insert the new lamp, and retighten firmly the two screws that are loosened in the previous process to lock it in place.
7. While interlocking the 2 tabs of the lamp cover to the projector, position the lamp cover on the projector, and push the center point of the two claws to fix the lamp cover. Then retighten firmly the screw of the lamp cover.
8. Please reposition and reconnect the projector, to return as before.
   Then turn the projector on.
9. Reset the lamp time using the LAMP TIME function in the OPTION menu.



(1) Press the MENU button to display a menu.
   Only when the EASY MENU has appeared, please perform the next step (2).
(2) Point at the “Go To Advance Menu …” in the menu using ▼/▲ button, then press the ► button.
(3) Point at the “OPTION” in the left column of the menu using ▼/▲ button, then press the ► button.



(4) Point at the ”LAMP TIME” using ▼/▲ button, then press the ► button. A dialog will appear.
(5) Press the ▲ button to select “RESET” on the dialog. It performs resetting the lamp time.

NOTE
•Please reset the lamp time only when you have replaced the lamp, for a suitable indication about the lamp.

6-8 Other care

⚠ WARNING

Before caring, make sure the power switch is off and the power cable is not plugged in, and then allow the projector to cool sufficiently. The care in a high temperature state of the projector could cause a burn and/or malfunction to the projector.

Avoid wetting the projector or inserting liquids in the projector. It could result in a fire, an electric shock, and/or malfunction to the projector.

• Don't put a container containing water , cleaner or chemicals near the projector.

• Don't use aerosols or sprays.

⚠ CAUTION

Please take right care of the projector according to the following. Incorrect care could cause not only an injury but adverse influence such as discoloration, peeling paint, etc.

• Do not use cleaner or chemicals other than those listed below.

• Do not polish or wipe with hard objects.

● Inside of the projector

In order to ensure the safe use of the projector, it is needed to clean and inspect the projector about once every year.

● Caring for the lens

If the lens is flawed, soiled or fogged, it could cause deterioration of display quality. Please take care of the lens, being cautions of the handling.

1. Turn the projector off, and unplug the power cord. Allow the projector to cool sufficiently.
2. After making sure that the projector is cool adequately, lightly wipe the lens with a commercially available lens-cleaning wipe. Do not touch the lens directly with your hand.

● Caring for the cabinet and remote control

Incorrect care could have adverse influence such as discoloration, peeling paint, etc.

1. Turn the projector off, and unplug the power cord. Allow the projector to cool sufficiently.
2. After making sure that the projector is cool adequately, lightly wipe with gauze or a soft cloth.
   If soiling is severe, dip soft cloth in water or a nautral cleaner dilute in water, and wipe lightly after wringing well. Then, wipe lightly with a soft, dry cloth.

6-9 Notice of AUTO adjustment

Use of AUTO adjustment with the image through RGB input optimizes V_POSI, H_POSI, H_SIZE and H_PHASE automatically.

In case that projected image has dark tone around its peripheral, AUTO operation sometimes makes artifacts in the image, shifts capture area and so on. Those failures are caused by period of image data is not exactly distinguished to period of blanking on signal processing.

To avoid such phenomena, AUTO function should be used with the full size picture that has bright tone on its peripheral.

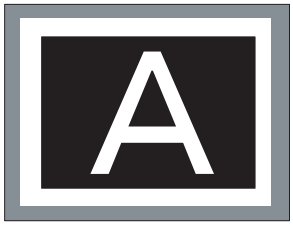


Image when AUTO operates correctly

Image when AUTO fails.

- Noting image of top or bottom lines.
- Shift of the image to East or West.
- Artifacts on image. Etc.

Note

1) The phenomenon at the failure of AUTO adjustment depends on resolution of input source, scene of picture etc.
2) There is no failure above in AUTO with video source through VIDEO, S-VIDEO or COMPONENT input. The reason is why recognition of input signal's standard does not need to search the capture range from input signal itself.

6-10 Related Messages

When the unit's power is on, messages such as those shown below may be displayed. When any such message is displayed on the screen, please respond as described below.

Although these messages will be automatically disappeared around several minutes, it will be reappeared every time the power is turned on.

Message	Description
NO INPUT IS DETECTED ON ***	**There is no input signal.** Please confirm the signal input connection, and the status of the signal source.
SYNC IS OUT OF RANGE ON *** fH *****kHz fV *****Hz	**The horizontal or vertical wavelength of the inputted signal is outside of the response parameters of this unit.** Please confirm the specs for this unit or the signal source specs.
CHECK THE AIR FLOW	**The internal portion temperature is rising.** Please turn the power OFF, and allow the unit to cool down at least 20 minutes. After having confirmed the following items, please turn the power ON again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35°C? • If the same indication is displayed after the treatment, please set the HIGH at FAN SPEED of the item SERVICE of the OPTION menu.
REMINDER ***HRS PASSED AFTER THE LAST FILTER CHECK. FILTER MAINTENANCE IS ESSENTIAL TO REMOVE WARNING MESSAGE, RESET FILTER TIMER. SEE MANUAL FURTHER INFO.	**A note of precaution when cleaning the air filter.** Please immediately turn the power OFF, and clean or change the air filter by referring to the "Air Filter" section of this manual. After you have cleaned or changed the air filter, please be sure to reset the filter timer.

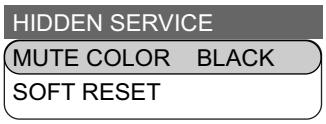
6-11 Regarding the indicator lamps

Lighting and flashing of the POWER indicator, the LAMP indicator, and the TEMP indicator have the meanings as described in the table below. Please respond in accordance with the instructions with in the table.

POWER indicator	LAMP indicator	TEMP indicator	Description
Lighting In Orange	Turned off	Turned off	**The projector is in a standby state.**
Blinking In Green	Turned off	Turned off	**The projector is warming up.** Please wait.
Lighting In Green	Turned off	Turned off	**The projector is in an on state.** Ordinary operations may be performed.
Blinking In Orange	Turned off	Turned off	**The projector is cooling down.** Please wait.
Blinking In Red	(discretionary)	(discretionary)	**The projector is cooling down. A certain error has been detected.** Please wait until the POWER indicator finishes blink, and then perform the proper response measure using the item descriptions below as reference.
Blinking In Red or Lighting In Red	Lighting In Red	Turned off	**The lamp does not light, and there is a possibility that interior portion has become heated.** Please turn the power off, and allow the unit to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation of the following items, and then turn the power on again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35°C? If the same indication is displayed after the treatment, please change the lamp by referring to the section "Lamp"
Blinking In Red or Lighting In Red	Blinking In Red	Turned off	**The lamp cover has not been properly fixed (attached).** Please turn the power off, and allow the unit to cool down at least 45 minutes. After the projector has sufficiently cooled down, please make confirmation of the attachment state of the lamp cover. After performing any needed maintenance, turn the power on again.
Blinking In Red or Lighting In Red	Turned off	Blinking In Red	**The cooling fan is not operating.** Please turn the power off, and allow the unit to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation that no foreign matter has become caught in the fan, etc. and then turn the power on again. If the same indication is displayed after the treatment, please replace a fan.
Blinking In Red or Lighting In Red	Turned off	Lighting In Red	**There is a possibility that the interior portion has become heated.** Please turn the power off, and allow the unit to cool down at least 20 minutes. After the projector has sufficiently cooled down, please make confirmation of the following items, and then turn the power on again. • Is there blockage of the air passage aperture? • Is the air filter dirty? • Does the peripheral temperature exceed 35°C? If the same indication is displayed after the treatment, please set the HIGH at the FAN SPEED of the item SERVICE of the OPTION menu.
Lighting In Green	Alternative blinking in Red		**There is a possibility that the interior portion has become overcooled.** Please use the unit within the usage temperature parameters (5°C to 35°C). After the treatment, resent the power to ON. If the same indication is displayed after the treatment, please make sure the wire connection of the connectors E301 and E302 on the PWB assembly MAIN.
Lighting In Green	Simultaneous blinking in Red		**It is time to clean the air filter.** Please immediately turn the power off, and clean or change the air filter referring to the section "Air Filter". After cleaning or changing the air filter, please be sure to reset the filter timer. After the remedy, reset the power to ON. If the same indication is displayed after the treatment, please make sure that the panel duct assembly is assembled correctly. If it still does not recover, replace a cooling fan, especially the DC FAN(PANEL B).

NOTE • When the interior portion has become overheated, for safety purposes, the power source is automatically turned off, and the indicator lamps may also be turned off. In such a case, press the "○" (OFF) side of the power switch, and wait at least 45 minutes. After the projector has sufficiently cooled down, please make confirmation of the attachment state of the lamp and lamp cover, and then turn the power on again.

6-12 HIDDEN SERVICE MENU



To display the OSD for “HIDDEN SERVICE MENU” set up.

By the control panel	By the remote control transmitter
1. Display the Advance menu by the “MENU” button.(If EASY MENU appears, choose “Go to Advance menu” to display ADVANCE MENU.) 2. Select the “OPTION” on the menu. 3. Continue press the button [◀] first, then press the button [◀] together with “INPUT”, and hold for 3 seconds.	1. Display the menu by the “MENU” button. (If EASY MENU appears, choose “Go to Advance menu” to display ADVANCE MENU.) 2. Select the “OPTION” on the menu. 3. Press the “MAGNIFY OFF” button. Next hold the “MAGNIFY OFF” button for 3 seconds.

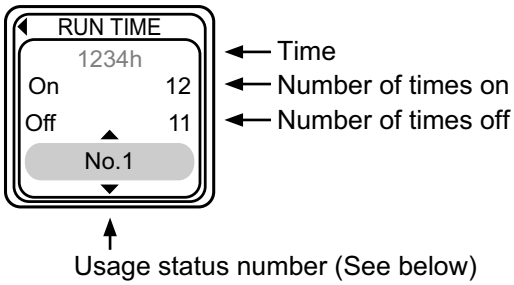
● SOFT RESET

If this is executed, all of the user data is initialized. Never use it when not required.

6-13 RUN TIME window

● Set operating time display method (accumulated lamp time display method)

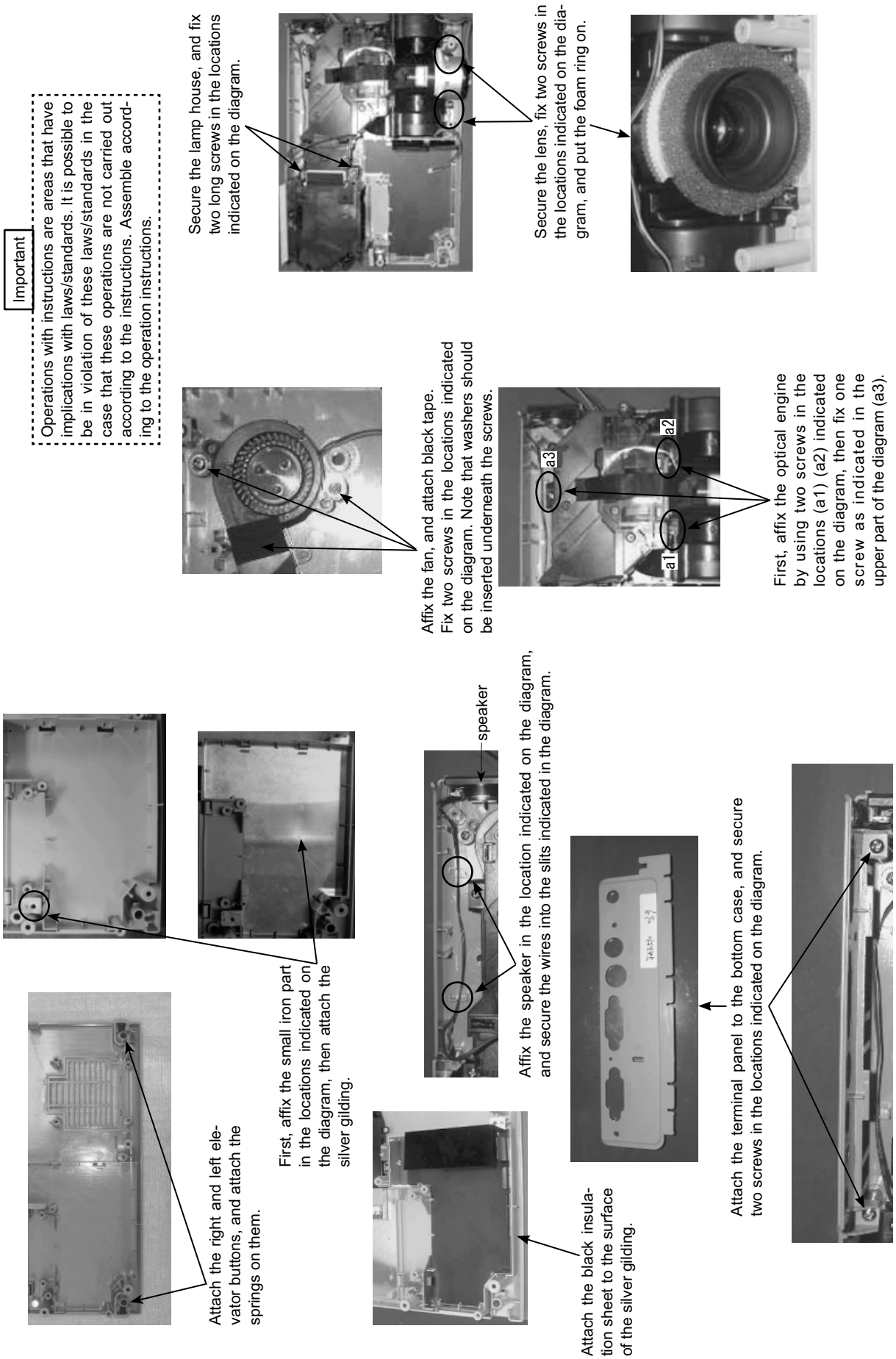
1. Select “OPTION” from the Advance menu, then place the cursor on the “LAMP TIME”.
2. Press the [Reset] button once, then press [KEYSTONE] button of the remote control for 3 seconds or more to display the screen shown below. (The menu will close after 10 seconds if there are no further operations.)
3. Use [▲] or [▼] to select the usage status number. (The usage status is as shown below.)



Usage status number

0 ..... Total usage status
1 ..... Current usage status
2 ..... Usage status before first reset
3 ..... Usage status before second reset
||
9 ..... Usage status before eighth reset
10..... Total usage status with standby time

7. Wiring diagram


Important
Operations with instructions are areas that have implications with laws/standards. It is possible to be in violation of these laws/standards in the case that these operations are not carried out according to the instructions. Assemble according to the operation instructions.
Secure the lamp house, and fix two long screws in the locations indicated on the diagram.
Secure the lens, fix two screws in the locations indicated on the diagram, and put the foam ring on.
Affix the fan, and attach black tape. Fix two screws in the locations indicated on the diagram. Note that washers should be inserted underneath the screws.
a1
a2
a3
First, affix the optical engine by using two screws in the locations (a1) (a2) indicated on the diagram, then fix one screw as indicated in the upper part of the diagram (a3).
speaker
Affix the speaker in the location indicated on the diagram, and secure the wires into the slits indicated in the diagram.
Attach the terminal panel to the bottom case, and secure two screws in the locations indicated on the diagram.
Attach the black insulation sheet to the surface of the silver gilding.
First, affix the small iron part in the locations indicated on the diagram, then attach the silver gilding.
Attach the right and left elevator buttons, and attach the springs on them.

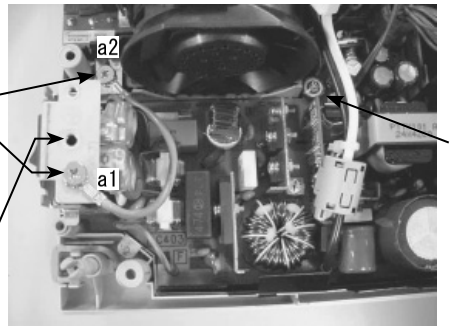
Wiring diagram 1

Important

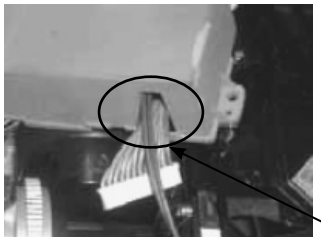
First, Fix one end of the earthing wire to the AC inlet metal of the power board(circuit). See the location indicated on the diagram (a1). Then, fix the other end of the earthing wire in the location indicated on diagram (a2).

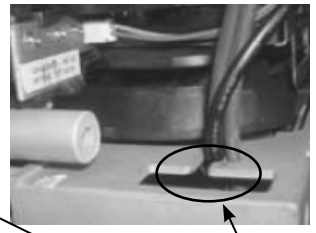
Important

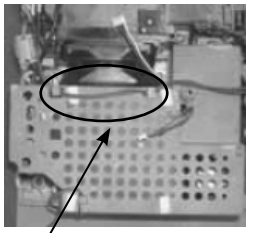
Fix one end of the other earthing wire to the AC inlet metal with a screw.



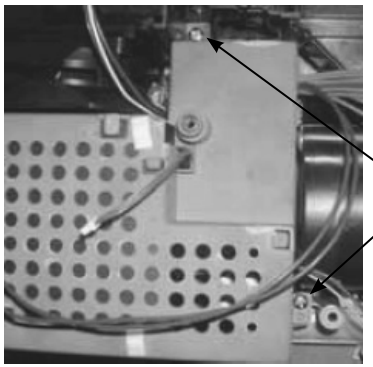
Affix the power board(circuit), and secure a washer and screw in the location indicated on the diagram.



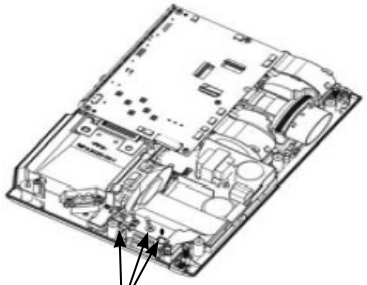




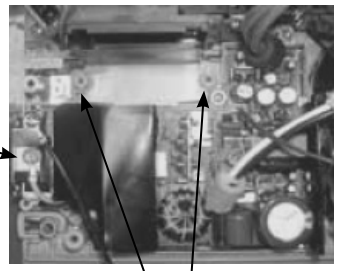
Pass the wire through the slots in the ballast bracket as indicated in the diagram.



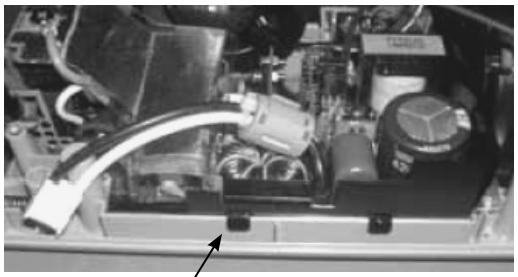
First, attach the power board(ballast) to the ballast bracket.
Place the ballast blacket onto the power board(circuit), and secure it in the location indicated on the diagram using two screws.

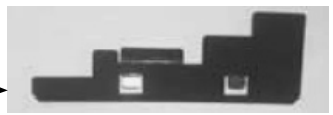


Use M4 screws
with crow washers

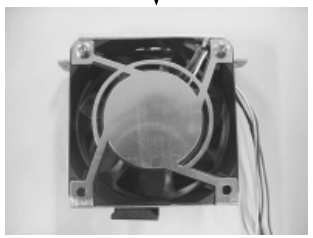


Attach the fan, and secure two screws in the locations indicated on the diagram.

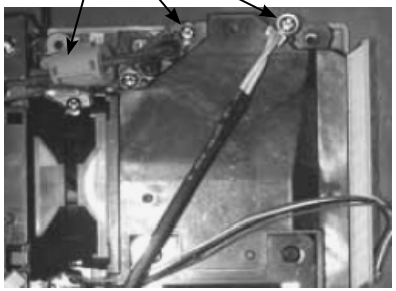




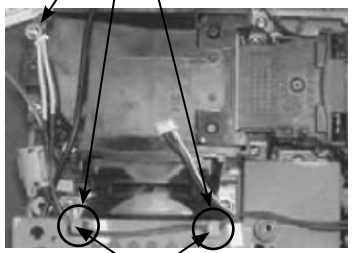
Attach the black insulation sheet to the location indicated in the diagram.



Fasten the wire in the location indicated on the diagram, and secure it with two screws. Attach a magnet.



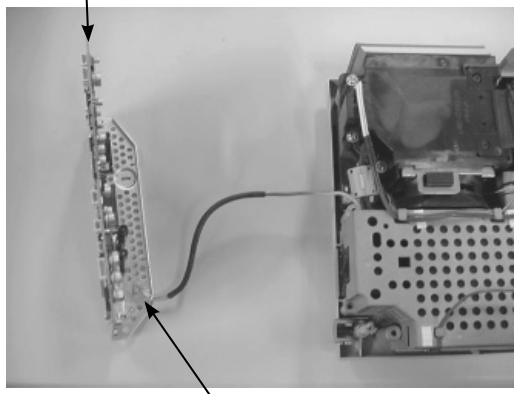
After hooking the wire of the thermal switch(TSW) on the ballast bracket as shown in the diagram, fasten it in the location indicated in the diagram. Secure it in place using one screw.



hooks

Wiring diagram 2

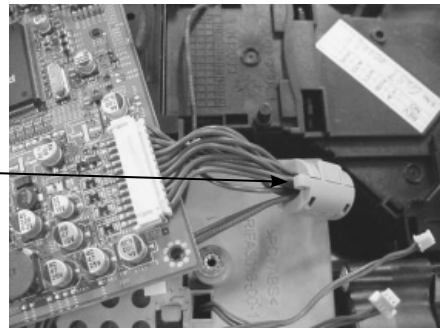
PWB assembly MAIN

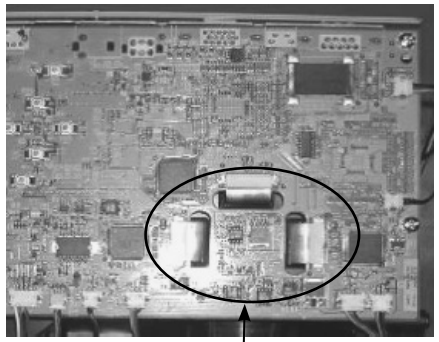


Important

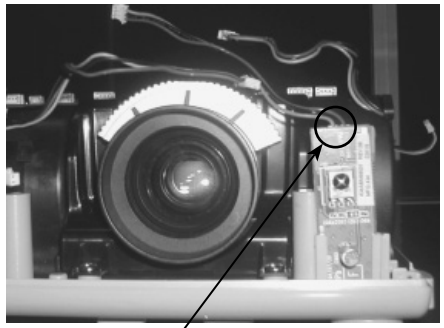
Secure the earthing wire to the I/O metal of the MAIN board indicated on the diagram.

Attach the magnet to the 12Pin wire and thermal switch wire and fasten it.

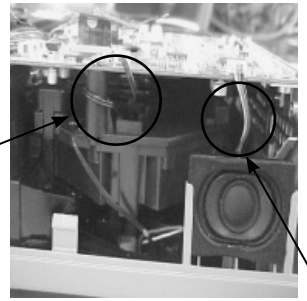




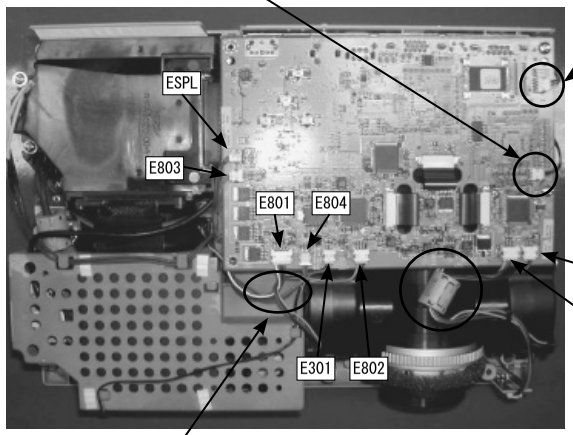
Insert the three flexible cables into the connectors of the MAIN board.



Connect the cable to PWB assembly REMOTE.



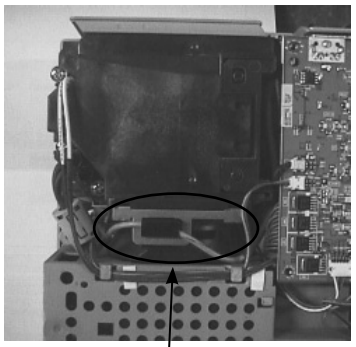
E302 Wrap the wire two times around the boss.



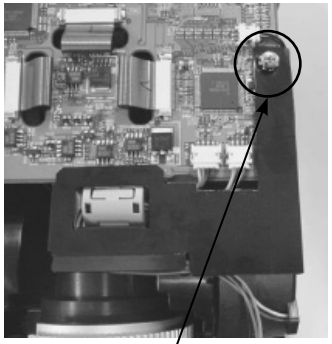
E806 Insert the wire behind the speaker.

Wrap E802 around E801, E804, and E301.

Wiring diagram 3

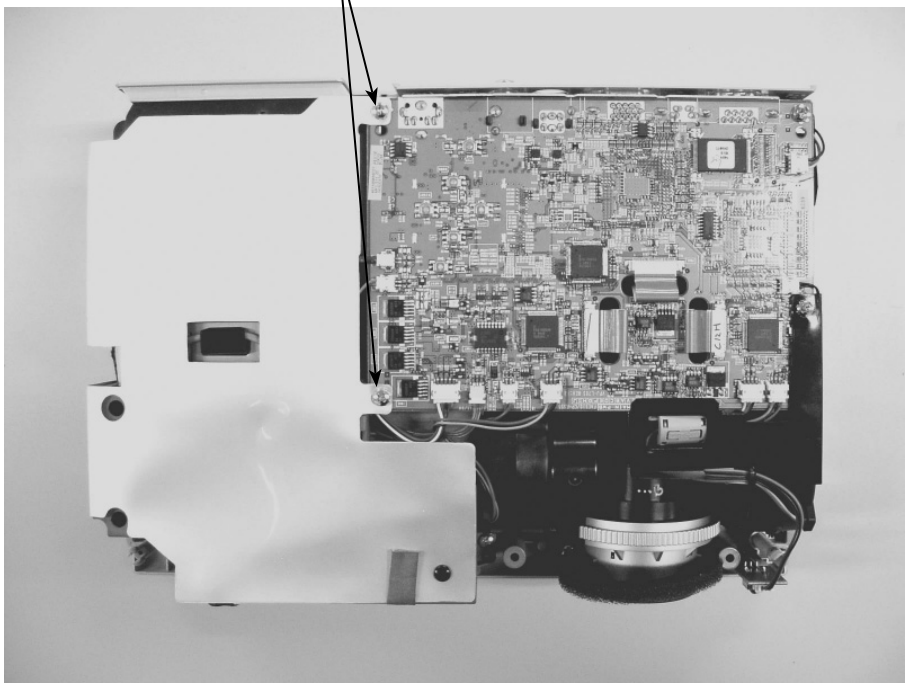


Pass the earthing wire underneath the insulation sheet indicated on the diagram.



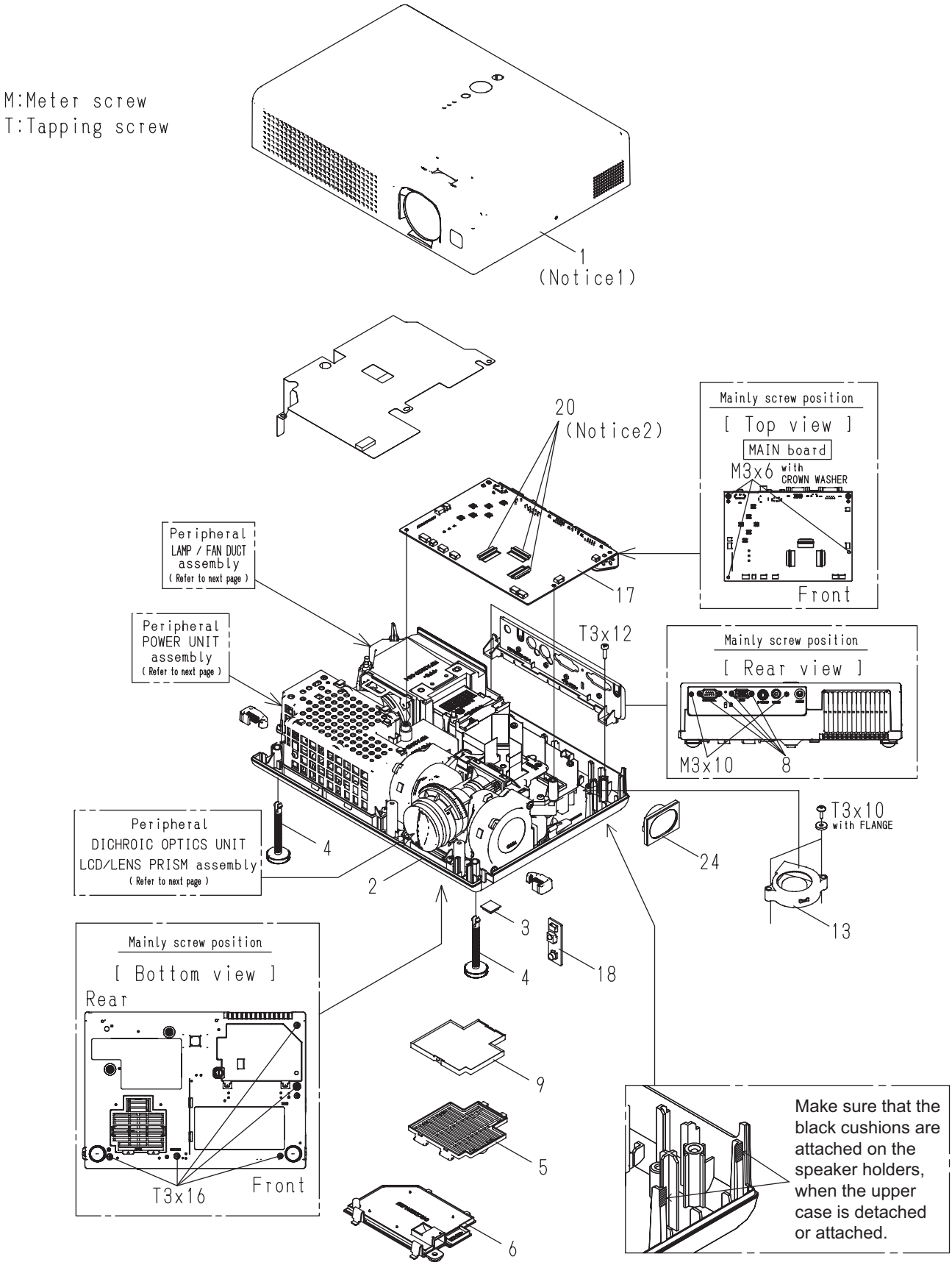
Affix insulation sheet, and secure it in place with one screw in the location indicated on the diagram.

Secure the shield sheet and the MAIN board with two screws.



Wiring diagram 4

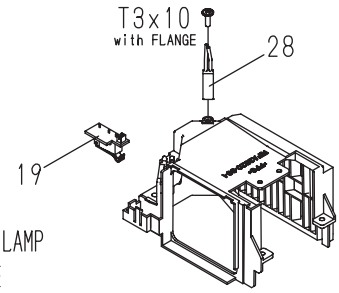
8. Disassembly diagram



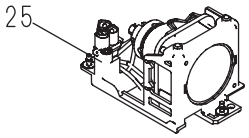
M:Meter screw
T:Tapping screw

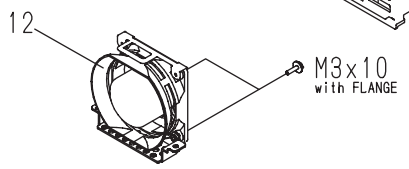
Peripheral
LAMP /FAN DUCT
assembly

See below about the screw.

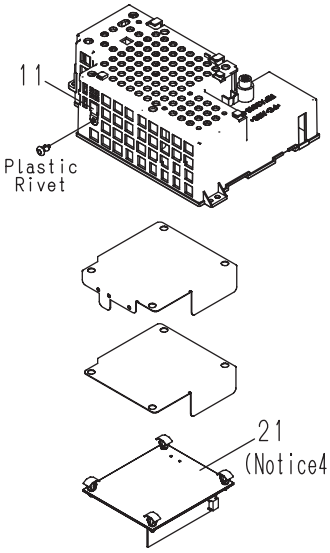


Removing the FAN and LAMP
allows the LAMP HOUSE
to come off.



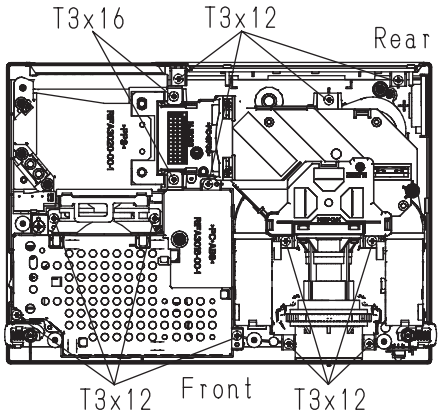


Peripheral
POWER UNIT
assembly
(Notice3)



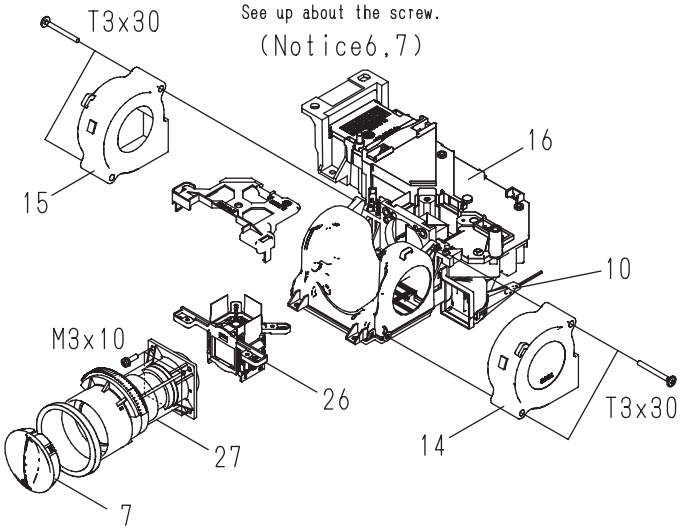
Mainly screw position

[Top view] Removed Upper case and MAIN borad



Peripheral
DICHROIC OPTICS UNIT
LCD PRISM assembly

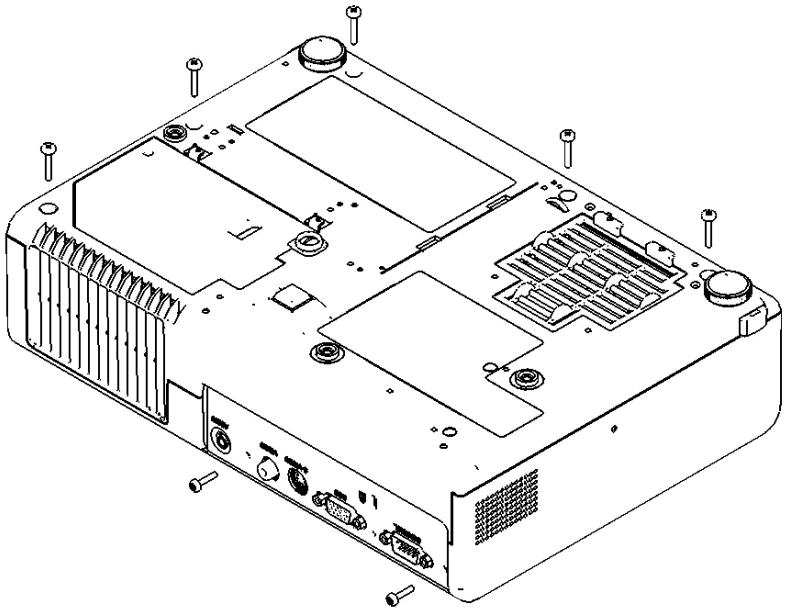
See up about the screw.
(Notice6,7)



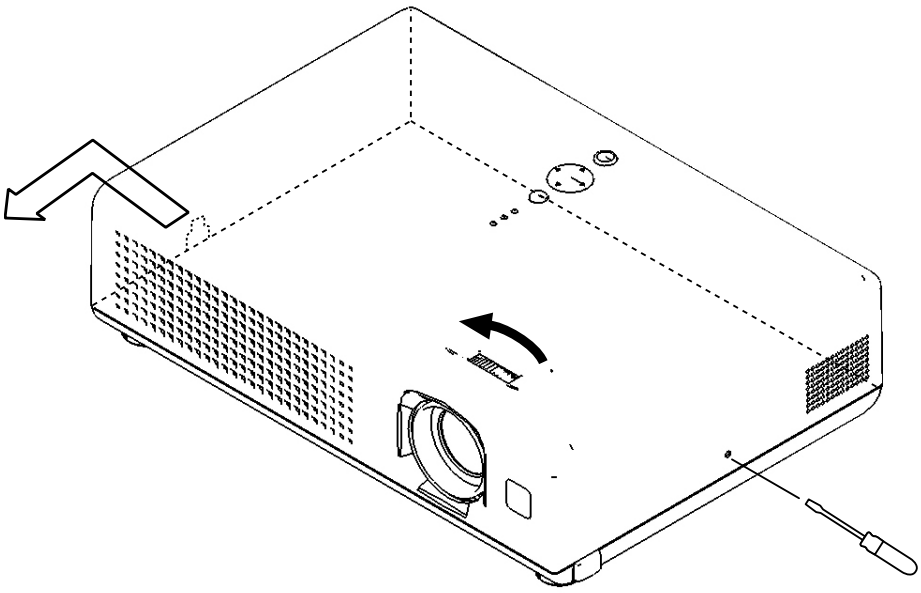
Notice

1. Removes the UPPER CASE assembly

(1) Turn over the projector slowly, so that the bottom is facing up.
(2) Unscrew five tapping-screws on the bottom and two meter-screws on the rear.



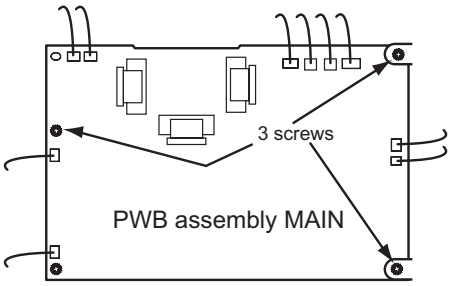
(3) Turn the focus ring in the direction shown in the figure to shift the lens inward.
(4) Stick a hard and thin stick into a hole (2mm in diameter) on the right side of the projector to unclip the UPPER CASE assembly from the BOTTOM CASE assembly. (They will be separated with about 2mm gap.)
(5) Shift the hole part around the AC inlet forward and upward.



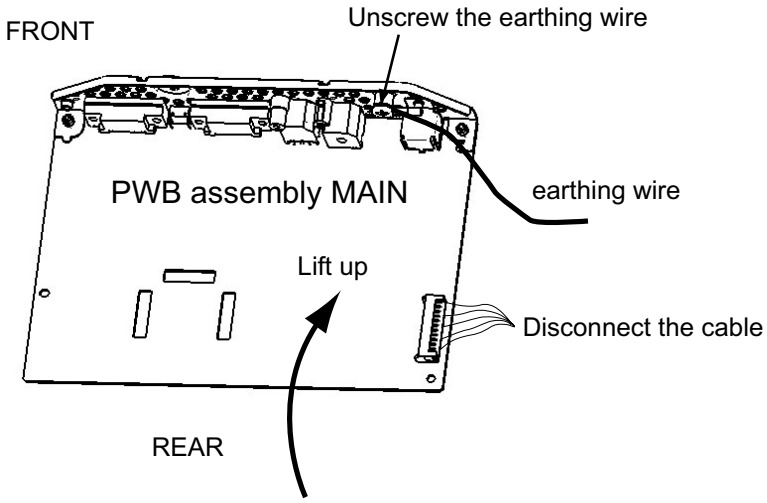
2. Cautions when removing the PWB assembly MAIN

When removing the PWB assembly MAIN, there is danger of damaging the connector connecting cables.

(1) Disconnect 13 cables and remove 3 screws.

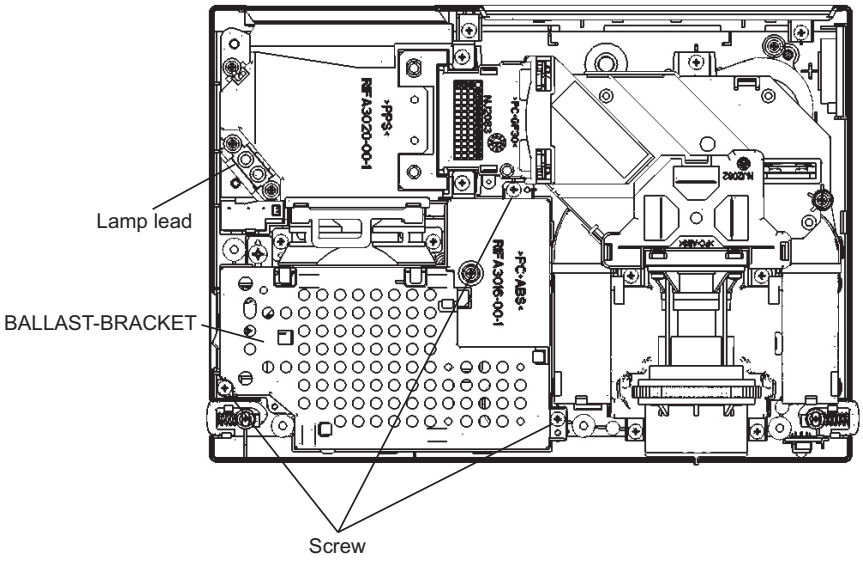


(2) Lift up the rearward of the PWB assembly MAIN to the front, while pushing rear portion of bottom case toward the outside so that the terminals of MAIN board may not be caught in bottom case. And then disconnect cable and unscrew the earthing wire.



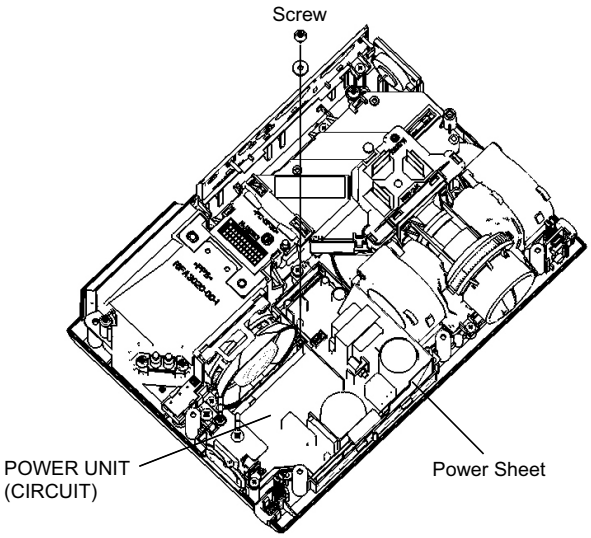
3.Removes POWER BOARD(CIRCUIT)

(1) Unscrew 3 screws, and then get the BALLAST-BRACKET off.

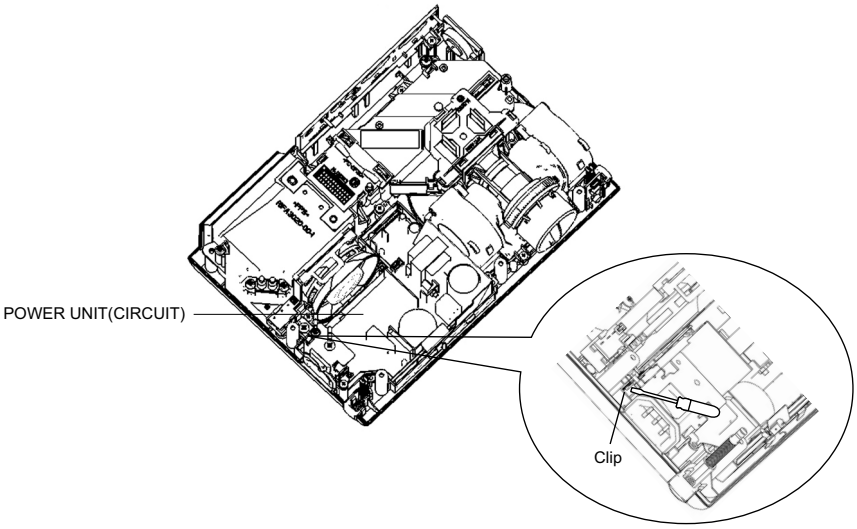


Disconnect the lamp lead, and the cable CN1 from the POWER UNIT(ballast).

(2) Take the Power Sheet off, and then unscrew a screw with a plastic washer.

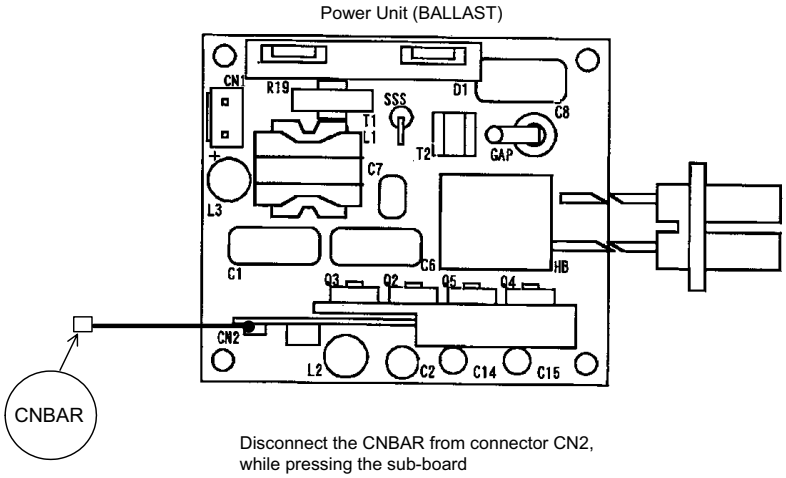


In removing POWER BOARD(CIRCUIT) from the bottom case assembly, use flat screw driver or fine tool to unclip the holder with the arrow shown below.



4. Cautions When Removing The Power Unit (BALLAST)

When removing the cable (CNBAR) connected to Power Unit (BALLAST), there is danger of damaging the small PWB connecting cables.



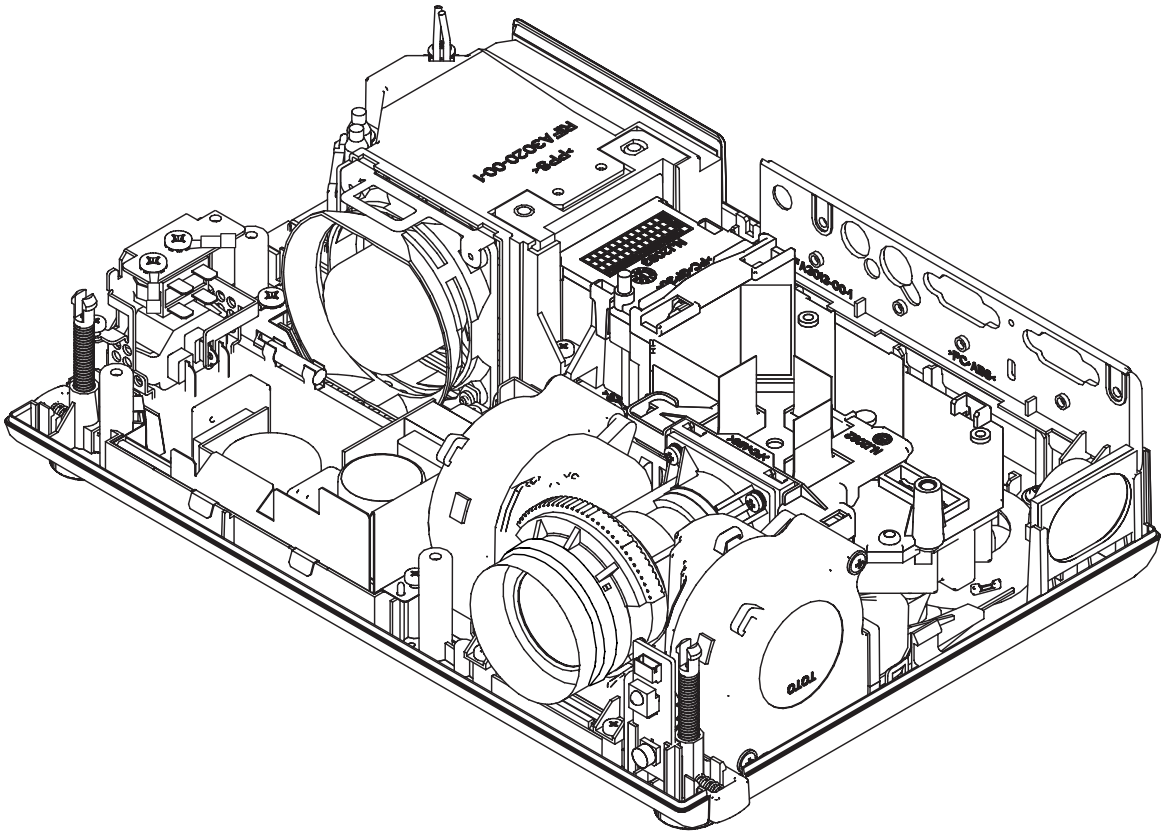
Disconnect the CNBAR from connector CN2,
while pressing the sub-board
(to prevent the stress on the sub-board).

5. Putting the power supply unit together after the maintenance of the POWER UNIT (CIRCUIT) and/or the POWER UNIT (BALLAST).

⚠ WARNING

Assemble the power supply unit with care to achieve the required insulation. Incorrect assembly could cause a fire and/or an electric shock.

Attaching the Power Sheet correctly



6. How to exchange the DICHROIC OPTICS UNIT and the LENS ASS'Y.

⚠ CAUTION

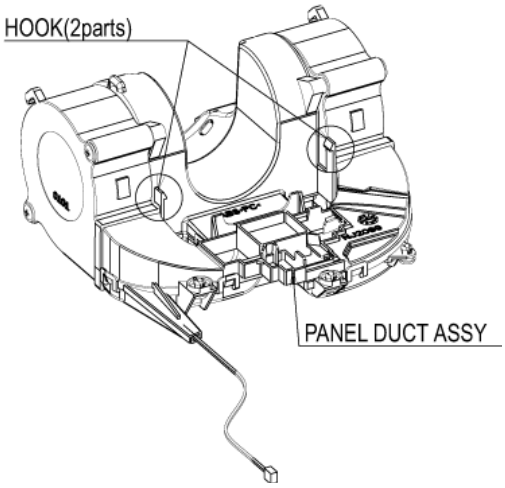
Please remove the PANEL DUCT ASSY before the LENS ASS'Y.
Please take care of two hooks on the PANEL DUCT ASSY.

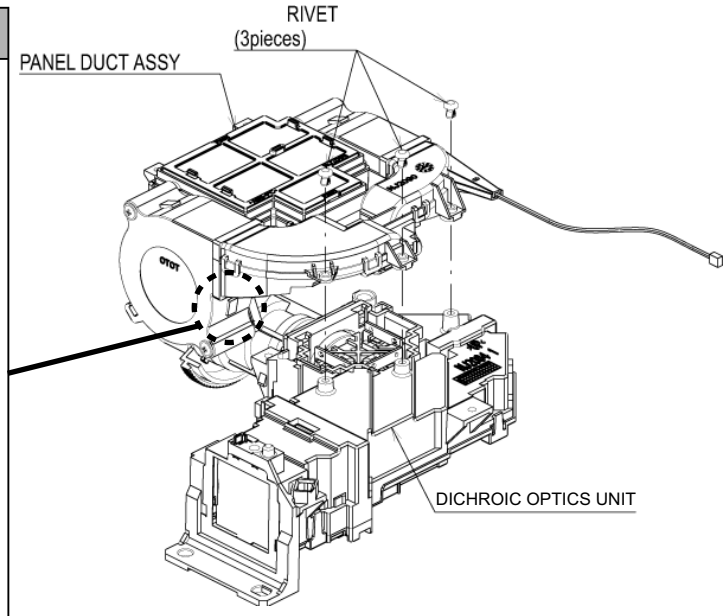
(1) How to detach the PANEL DUCT ASSY.

Please remove three rivets and unclip two hooks to take the PANEL DUCT ASSY off.

⚠ ATTENTION

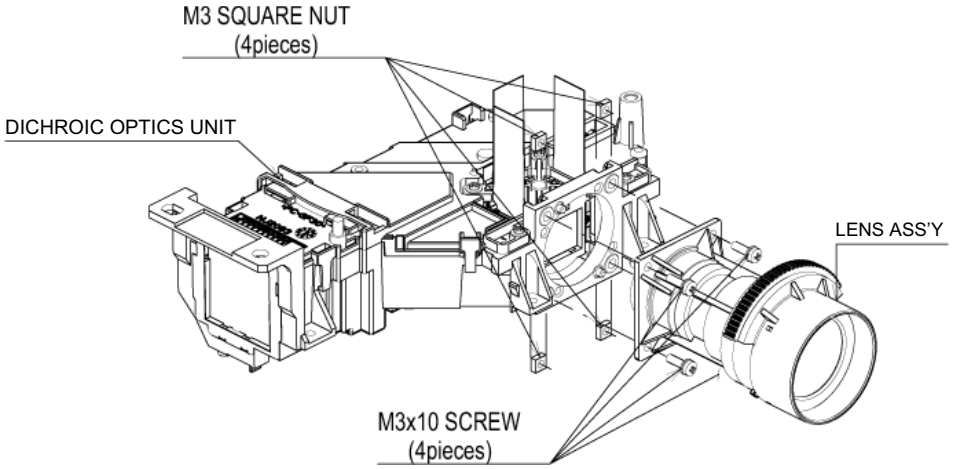
Don't break two hooks on the PANEL DUCT ASSY.





(2) How to detach the LENS ASS'Y.

Please remove four screws and four squere nuts, and take the LENS ASS'Y off.



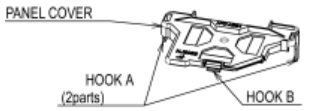
Moreover, separate LCD/PRSM ASSY and DICHROIC OPTICS UNIT in accordance with the instruction on the following page.

7. Replace the LCD/PRSM assembly

To keep up good condition on optics. Please pay attention to the LCD/PRSM ASSY exchange. Please follow the direction below in order to exchange parts.

(1) How to remove damaged LCD/PRSM ASSY

Please detach PANEL COVER.

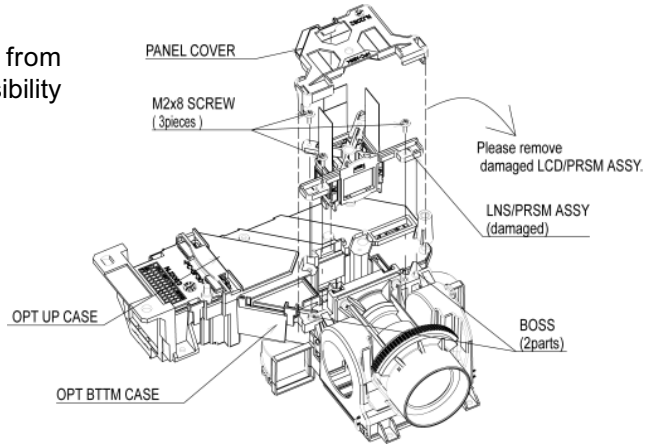


Sequence of detaching PANEL COVER's hook
(1st.) Please detach HOOK-A(2parts).
(2nd.) Please detach HOOK-B

⚠ CAUTION

When you take off PANEL COVER, please take care not to break its hooks.
Please don't break bosses.

Please remove three screws (M2x8).
Please remove damaged LCD/PRSM ASSY from OPT BTTM CASE vertically to avoid the possibility that the positioning boss cracks.

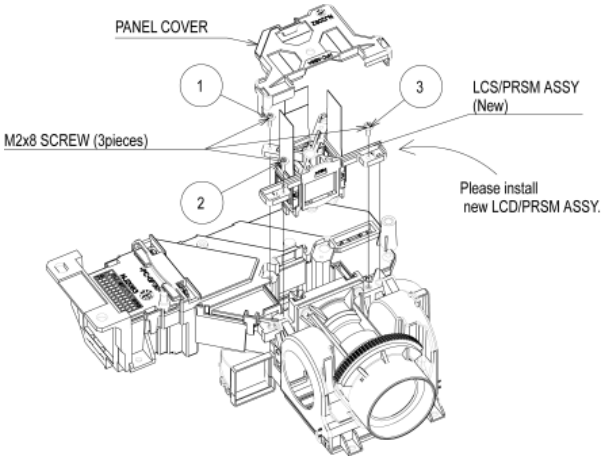


(2) How to install new LCD/PRSM ASSY

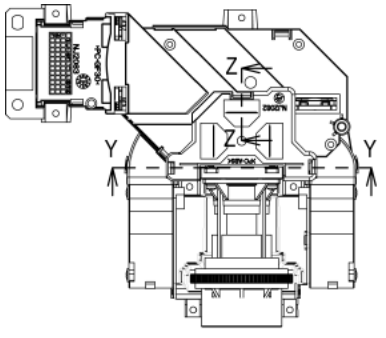
⚠ CAUTION

Please don't LCD PANEL contact with other parts.

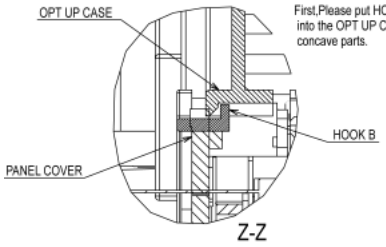
Please install new LCD/PRSM ASSY into OPT BTTM CASE vertically to avoid the possibility that the positioning boss cracks. Note that LCD PANEL don't come in contact with other parts when you install it.
Please tighten up a screw (M2x8) in order of 1→2→3.
reference : at tightening torque 0.15~0.3N·m.

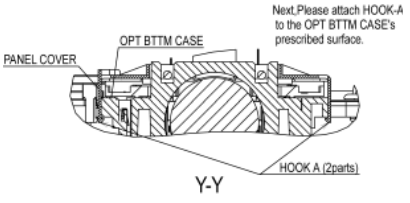


Please attach PANEL COVER.



Sequence of attaching PANEL COVER's hook
(1st.) Please attach HOOK-B(2parts).
(2nd.) Please attach HOOK-A

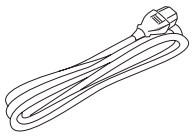




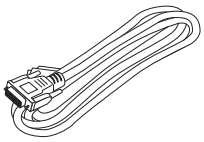
9. Replacement Parts list

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the projector through improper servicing.

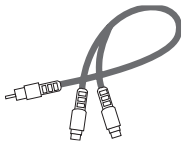
SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
1	QD51571	UP CASE ASSY C12H	24	GK01341	SPEAKER
2	QD39905	B CASE ASSY	⚠ 25	DT00707	LAMP UNIT ASS'Y
3	PE00191	RUBBER FOOT C12SM	26	UX23747	LCD/PRISM ASS'Y
4	QJ01681	ADJUST FOOT C12SM	27	KS09043	LENS ASS'Y
5	QD51581	FILTER COVER ASS'Y C12H	28	FH00311	THERMAL SW ASSY
6	QD39935	LAMP DOOR ASS'Y PJ-LC9			
7	QD39941	LENS CAP C12SM		QR65191	INSTRUCTION MANUAL SASSY PJ-LC9
8	MJ02872	D-SUB SCREW		QD51591	F COVER H ASSY C12H
9	NJ22642	AIR FILTER S ASSY		HL02151	REMOTE CONTROL UNIT
10	AZ00941	THERMISTOR A	⚠	EV01662	POWER SUPPLY CORD(US TYPE) W/CORE
11	AZ01021	THERMISTOR B	⚠	EV01672	POWER SUPPLY CORD(EUROPE TYPE) W/CORE
⚠ 12	GS01103	DC FAN(LAMP)	⚠	EV01682	POWER SUPPLY CORD(UK TYPE) W/CORE
⚠ 13	GS01082	DC FAN(PBS)		EW06661	RGB-D CABLE(15PIN MALE TO 15PIN MALE)
⚠ 14	GS01061	DC FAN(PANEL B)		NX08061	COTTON STICK L147
⚠ 15	GS01052	DC FAN(PANEL RG)		EW08212	V/A CABLE W/CORE-2
16	UX23767	DICHROIC OPTICS UNIT		EW06532	S-CABLE W/CORE-2
17	JP09703	PWB ASS'Y MAIN		EW07071	AUDIO CABLE W/CORE
18	JP08551	PWB ASS'Y REMOTE		EW08521	AUDIO ADAPTER(RCA-STEREO MINI)
19	JP08561	PWB ASS'Y SW		EW08531	RCA-DSUB CORD
20	EA02091R	CPC30 CONNECTOR			
⚠ 21	HA01541	POWER UNIT(BALLAST)			
⚠ 22	HA01531	POWER UNIT(CIRCUIT)			
⚠ 23	2722448	FUSE			



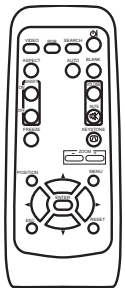
Power Cord



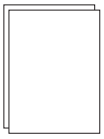
RGB Cable



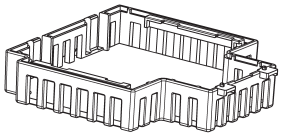
Audio adopter
(RCA-Stereo mini)



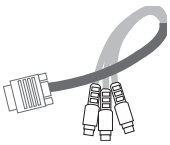
Remote Control



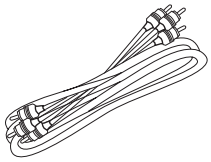
Instruction manual



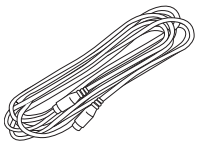
Filter Cover H ASSY C12H



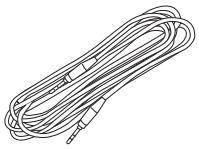
component video adopter
(RCA-D-sub cord)



V/A cable

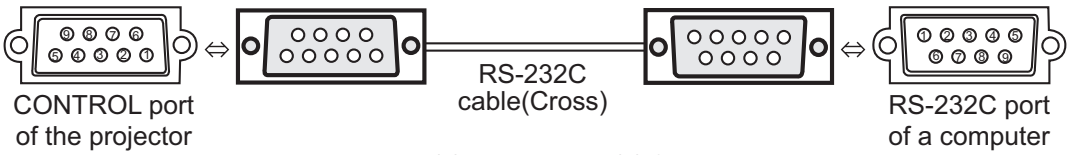


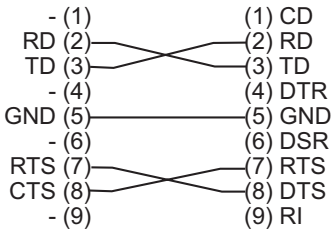
S cable



Audio cable

10. RS-232C communication





● Connecting the cable

(1) Turn off the projector and the computer power supplies.

(2) Connect the CONTROL port of the projector with a RS-232C port of the computer by a RS-232C cable(Cross). Use the cable that fulfills the specification shown in the previous page.

(3) Turn on the computer power supply and after the computer has started up, turn on the projector power supply.

● Communications setting

19200 bps, 8N1

1. Protocol

Consist of header (7 bytes) + Command data (6 bytes)

2. Header

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high

CRC_low: Lower byte of CRC flag for command data

CRC_high: Upper byte of CRC flag for command data

3. Command Data

Command Data Chart

byte_0	byte_1	byte_2	byte_3	byte_4	byte_5
Action		Type		Setting code	
low	high	low	high	low	high

Action (byte_0 - 1)

Action	Classification	Content
1	Set	Change setting to desired value.
2	Get	Read projector internal setup value.
4	Increment	Increment setup value by 1.
5	Decrement	Decrement setup value by 1.
6	Execute	Run a command.

Requesting projector status (Get command)

(1) Send the request code Header + Command data (‘02H’+‘00H’+ type (2 bytes)+ ‘00H’+‘00H’) from the computer to the projector.
(2) The projector returns the response code ‘1DH’+ data (2 bytes) to the computer.

Changing the projector settings (Set command)

(1) Send the setting code Header + Command data (‘01H’+‘00H’+ type (2 bytes) + setting code (2 bytes)) from the computer to the projector.
(2) The projector changes the setting based on the above setting code.
(3) The projector returns the response code ‘06H’ to the computer.

Using the projector default settings (Reset Command)

(1) The computer sends the default setting code Header + Command data (‘06H’+ ‘00H’+ type (2 bytes) + ‘00H’+‘00H’) to the projector.
(2) The projector changes the specified setting to the default value.
(3) The projector returns the response code ‘06H’ to the computer.

Increasing the projector setting value (Increment command)

(1) The computer sends the increment code Header + Command data (‘04H’+ ‘00H’+ type (2 bytes) +‘00H’+ ‘00H’) to the projector.
(2) The projector in creases the setting value on the above setting code.
(3) The projector returns the response code ‘06H’ to the computer.

Decreasing the projector setting value (Decrement command)

(1) The computer sends the decrement code Header + Command data (‘05H’+ ‘00H’+ type (2 bytes) +‘00H’ + ‘00H’) to the projector.
(2) The projector decreases the setting value on the above setting code.
(3) The projector returns the response code ‘06H’ to the computer.

When the projector cannot understand the received command

When the projector cannot understand the received command, the error code ‘15H’ is sent back to the computer.

Sometimes the projector cannot properly receive the command. In such a case, the command is not executed and the error code ‘15H’ is sent back to the computer. If this error code is returned, send the same command again.

When the projector cannot execute the received command.

When the projector cannot execute the received command, the error code ‘1cH’ + ‘xxxxH’ is sent back to the computer. When the data length is greater than indicated by the data length code, the projector ignore the excess data code.

Conversely when the data length is shorter than indicated by the data length code, an error code will be returned to the computer.

NOTE • Operation cannot be guaranteed when the projector receives an undefined command or data.
• Provide an interval of at least 40ms between the response code and any other code.
• The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
• Commands are not accepted during warm-up.

● Command data chart

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
Power	Set	Turn off	BE EF	03	06 00	2A D3	01 00	00 60	00 00
		Turn on	BE EF	03	06 00	BA D2	01 00	00 60	01 00
	Get		BE EF	03	06 00	19 D3	02 00	00 60	00 00
			(Example return) 00 00 (Off) 01 00 (On) 02 00 (Cool down)						
Input Source	Set	RGB	BE EF	03	06 00	FE D2	01 00	00 20	00 00
		VIDEO	BE EF	03	06 00	6E D3	01 00	00 20	01 00
		S-VIDEO	BE EF	03	06 00	9E D3	01 00	00 20	02 00
	Get		BE EF	03	06 00	CD D2	02 00	00 20	00 00
Error Status	Get		BE EF	03	06 00	D9 D8	02 00	20 60	00 00
			(Example return) 00 00 (Normal) 01 00 (Cover error) 02 00 (Fan error) 03 00 (Lamp error) 04 00 (Temp error) 05 00 (Air flow error) 06 00 (Lamp time error) 07 00 (Cool error) 08 00 (Filter error)						
BRIGHT	Get		BE EF	03	06 00	89 D2	02 00	03 20	00 00
	Increment		BE EF	03	06 00	EF D2	04 00	03 20	00 00
	Decrement		BE EF	03	06 00	3E D3	05 00	03 20	00 00
BRIGHT Reset	Execute		BE EF	03	06 00	58 D3	06 00	00 70	00 00
CONTRAST	Get		BE EF	03	06 00	FD D3	02 00	04 20	00 00
	Increment		BE EF	03	06 00	9B D3	04 00	04 20	00 00
	Decrement		BE EF	03	06 00	4A D2	05 00	04 20	00 00
CONTRAST Reset	Execute		BE EF	03	06 00	A4 D2	06 00	01 70	00 00
MODE	Set	NORMAL	BE EF	03	06 00	23 F6	01 00	BA 30	00 00
		CINEMA	BE EF	03	06 00	B3 F7	01 00	BA 30	01 00
		DYNAMIC	BE EF	03	06 00	E3 F4	01 00	BA 30	04 00
	Get		BE EF	03	06 00	10 F6	02 00	BA 30	00 00
			(Example return) 00 00 (Normal) 01 00 (Cinema) 04 00 (Dynamic) 10 00 (Custom)						
GAMMA	Set	#1 DEFAULT	BE EF	03	06 00	07 E9	01 00	A1 30	20 00
		#1 CUSTOM	BE EF	03	06 00	07 FD	01 00	A1 30	10 00
		#2 DEFAULT	BE EF	03	06 00	97 E8	01 00	A1 30	21 00
		#2 CUSTOM	BE EF	03	06 00	97 FC	01 00	A1 30	11 00
		#3 DEFAULT	BE EF	03	06 00	67 E8	01 00	A1 30	22 00
		#3 CUSTOM	BE EF	03	06 00	67 FC	01 00	A1 30	12 00
	Get		BE EF	03	06 00	F4 F0	02 00	A1 30	00 00
User Gamma Pattern	Set	Off	BE EF	03	06 00	FB FA	01 00	80 30	00 00
		9 step gray scale	BE EF	03	06 00	6B FB	01 00	80 30	01 00
		15 steps gray scale	BE EF	03	06 00	9B FB	01 00	80 30	02 00
		Ramp	BE EF	03	06 00	0B FA	01 00	80 30	03 00
	Get		BE EF	03	06 00	C8 FA	02 00	80 30	00 00

Names	Operation Type	Header			CRC	Command Data		
						Action	Type	Setting Code
User Gamma Point 1	Get	BE EF	03	06 00	08 FE	02 00	90 30	00 00
	Increment	BE EF	03	06 00	6E FE	04 00	90 30	00 00
	Decrement	BE EF	03	06 00	BF FF	05 00	90 30	00 00
User Gamma Point 2	Get	BE EF	03	06 00	F4 FF	02 00	91 30	00 00
	Increment	BE EF	03	06 00	92 FF	04 00	91 30	00 00
	Decrement	BE EF	03	06 00	43 FE	05 00	91 30	00 00
User Gamma Point 3	Get	BE EF	03	06 00	B0 FF	02 00	92 30	00 00
	Increment	BE EF	03	06 00	D6 FF	04 00	92 30	00 00
	Decrement	BE EF	03	06 00	07 FE	05 00	92 30	00 00
User Gamma Point 4	Get	BE EF	03	06 00	4C FE	02 00	93 30	00 00
	Increment	BE EF	03	06 00	2A FE	04 00	93 30	00 00
	Decrement	BE EF	03	06 00	FB FF	05 00	93 30	00 00
User Gamma Point 5	Get	BE EF	03	06 00	38 FF	02 00	94 30	00 00
	Increment	BE EF	03	06 00	5E FF	04 00	94 30	00 00
	Decrement	BE EF	03	06 00	8F FE	05 00	94 30	00 00
User Gamma Point 6	Get	BE EF	03	06 00	C4 FE	02 00	95 30	00 00
	Increment	BE EF	03	06 00	A2 FE	04 00	95 30	00 00
	Decrement	BE EF	03	06 00	73 FF	05 00	95 30	00 00
User Gamma Point 7	Get	BE EF	03	06 00	80 FE	02 00	96 30	00 00
	Increment	BE EF	03	06 00	E6 FE	04 00	96 30	00 00
	Decrement	BE EF	03	06 00	37 FF	05 00	96 30	00 00
User Gamma Point 8	Get	BE EF	03	06 00	7C FF	02 00	97 30	00 00
	Increment	BE EF	03	06 00	1A FF	04 00	97 30	00 00
	Decrement	BE EF	03	06 00	CB FE	05 00	97 30	00 00
COLOR TEMP	Set LOW	BE EF	03	06 00	6B F4	01 00	B0 30	01 00
	Set MIDDLE	BE EF	03	06 00	9B F4	01 00	B0 30	02 00
	Set HIGH	BE EF	03	06 00	0B F5	01 00	B0 30	03 00
	Set CUSTOM	BE EF	03	06 00	3B F8	01 00	B0 30	10 00
	Get	BE EF	03	06 00	C8 F5	02 00	B0 30	00 00
COLOR TEMP GAIN R	Get	BE EF	03	06 00	34 F4	02 00	B1 30	00 00
	Increment	BE EF	03	06 00	52 F4	04 00	B1 30	00 00
	Decrement	BE EF	03	06 00	83 F5	05 00	B1 30	00 00
COLOR TEMP GAIN G	Get	BE EF	03	06 00	70 F4	02 00	B2 30	00 00
	Increment	BE EF	03	06 00	16 F4	04 00	B2 30	00 00
	Decrement	BE EF	03	06 00	C7 F5	05 00	B2 30	00 00
COLOR TEMP GAIN B	Get	BE EF	03	06 00	8C F5	02 00	B3 30	00 00
	Increment	BE EF	03	06 00	EA F5	04 00	B3 30	00 00
	Decrement	BE EF	03	06 00	3B F4	05 00	B3 30	00 00
COLOR TEMP OFFSET R	Get	BE EF	03	06 00	04 F5	02 00	B5 30	00 00
	Increment	BE EF	03	06 00	62 F5	04 00	B5 30	00 00
	Decrement	BE EF	03	06 00	B3 F4	05 00	B5 30	00 00
COLOR TEMP OFFSET G	Get	BE EF	03	06 00	40 F5	02 00	B6 30	00 00
	Increment	BE EF	03	06 00	26 F5	04 00	B6 30	00 00
	Decrement	BE EF	03	06 00	F7 F4	05 00	B6 30	00 00

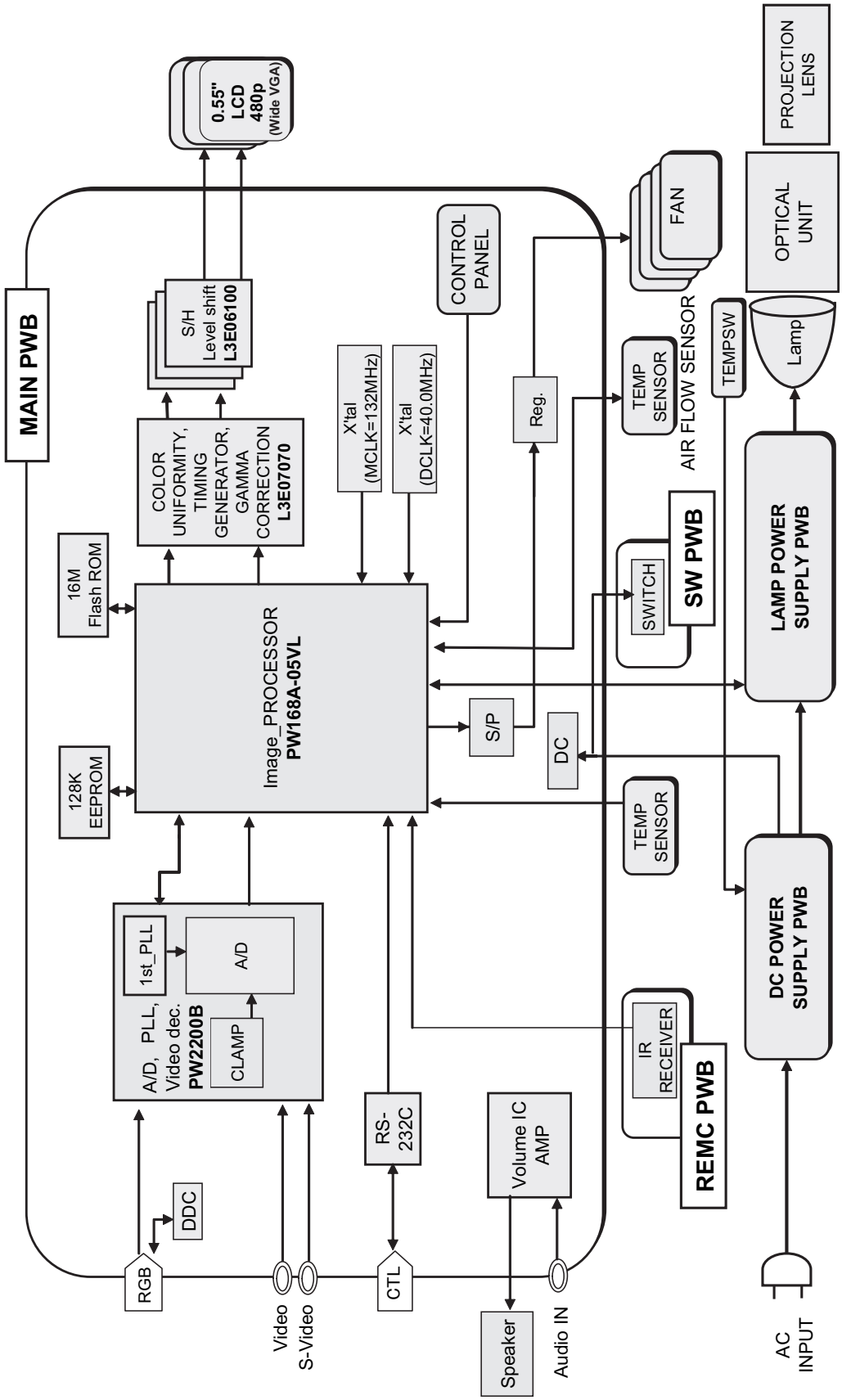
Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
COLOR TEMP OFFSET B	Get		BE EF	03	06 00	BC F4	02 00	B7 30	00 00
	Increment		BE EF	03	06 00	DA F4	04 00	B7 30	00 00
	Decrement		BE EF	03	06 00	0B F5	05 00	B7 30	00 00
COLOR	Get		BE EF	03	06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF	03	06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF	03	06 00	02 73	05 00	02 22	00 00
COLOR Reset	Execute		BE EF	03	06 00	80 D0	06 00	0A 70	00 00
TINT	Get		BE EF	03	06 00	49 73	02 00	03 22	00 00
	Increment		BE EF	03	06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF	03	06 00	FE 72	05 00	03 22	00 00
TINT Reset	Execute		BE EF	03	06 00	7C D1	06 00	0B 70	00 00
SHARPNESS	Get		BE EF	03	06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF	03	06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF	03	06 00	46 73	05 00	01 22	00 00
SHARPNESS Reset	Execute		BE EF	03	06 00	C4 D0	06 00	09 70	00 00
PROGRESSIVE	Set	TURN OFF	BE EF	03	06 00	4A 72	01 00	07 22	00 00
		TV	BE EF	03	06 00	DA 73	01 00	07 22	01 00
		FILM	BE EF	03	06 00	2A 73	01 00	07 22	02 00
	Get		BE EF	03	06 00	79 72	02 00	07 22	00 00
MY MEMORY Load	Set	1	BE EF	03	06 00	0E D7	01 00	14 20	00 00
		2	BE EF	03	06 00	9E D6	01 00	14 20	01 00
		3	BE EF	03	06 00	6E D6	01 00	14 20	02 00
		4	BE EF	03	06 00	FE D7	01 00	14 20	03 00
MY MEMORY Save	Set	1	BE EF	03	06 00	F2 D6	01 00	15 20	00 00
		2	BE EF	03	06 00	62 D7	01 00	15 20	01 00
		3	BE EF	03	06 00	92 D7	01 00	15 20	02 00
		4	BE EF	03	06 00	02 D6	01 00	15 20	03 00
ASPECT	Set	4:3	BE EF	03	06 00	9E D0	01 00	08 20	00 00
		16:9	BE EF	03	06 00	0E D1	01 00	08 20	01 00
		WIDE	BE EF	03	06 00	CE D3	01 00	08 20	05 00
		MOVIE1	BE EF	03	06 00	3E D3	01 00	08 20	06 00
		MOVIE2	BE EF	03	06 00	AE D2	01 00	08 20	07 00
		NORMAL	BE EF	03	06 00	5E DD	01 00	08 20	10 00
	Get		BE EF	03	06 00	AD D0	02 00	08 20	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
OVER SCAN	Get		BE EF	03	06 00	91 70	02 00	09 22	00 00
	Increment		BE EF	03	06 00	F7 70	04 00	09 22	00 00
	Decrement		BE EF	03	06 00	26 71	05 00	09 22	00 00
OVER SCAN Reset	Execute		BE EF	03	06 00	EC D9	06 00	27 70	00 00
V POSITION	Get		BE EF	03	06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF	03	06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF	03	06 00	BA 82	05 00	00 21	00 00
V POSITION Reset	Execute		BE EF	03	06 00	E0 D2	06 00	02 70	00 00
H POSITION	Get		BE EF	03	06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF	03	06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF	03	06 00	46 83	05 00	01 21	00 00
H POSITION Reset	Execute		BE EF	03	06 00	1C D3	06 00	03 70	00 00
H PHASE	Get		BE EF	03	06 00	49 83	02 00	03 21	00 00
	Increment		BE EF	03	06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF	03	06 00	FE 82	05 00	03 21	00 00
H SIZE	Get		BE EF	03	06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF	03	06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF	03	06 00	02 83	05 00	02 21	00 00
H SIZE Reset	Execute		BE EF	03	06 00	68 D2	06 00	04 70	00 00
AUTO ADJUST	Execute		BE EF	03	06 00	91 D0	06 00	0A 20	00 00
COLOR SPACE	Set	AUTO	BE EF	03	06 00	0E 72	01 00	04 22	00 00
		RGB	BE EF	03	06 00	9E 73	01 00	04 22	01 00
		SMPTE240	BE EF	03	06 00	6E 73	01 00	04 22	02 00
		REC709	BE EF	03	06 00	FE 72	01 00	04 22	03 00
		REC601	BE EF	03	06 00	CE 70	01 00	04 22	04 00
	Get		BE EF	03	06 00	3D 72	02 00	04 22	00 00
VIDEO FORMAT	Set	AUTO	BE EF	03	06 00	9E 75	01 00	00 22	0A 00
		NTSC	BE EF	03	06 00	FE 71	01 00	00 22	04 00
		PAL	BE EF	03	06 00	6E 70	01 00	00 22	05 00
		SECAM	BE EF	03	06 00	6E 75	01 00	00 22	09 00
		NTSC4.43	BE EF	03	06 00	5E 72	01 00	00 22	02 00
		M-PAL	BE EF	03	06 00	FE 74	01 00	00 22	08 00
		N-PAL	BE EF	03	06 00	0E 71	01 00	00 22	07 00
	Get		BE EF	03	06 00	0D 73	02 00	00 22	00 00
FRAME LOCK	Set	TURN OFF	BE EF	03	06 00	CB D6	01 00	14 30	00 00
		TURN ON	BE EF	03	06 00	5B D7	01 00	14 30	01 00
	Get		BE EF	03	06 00	F8 D6	02 00	14 30	00 00

Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
ZOOM	Get		BE EF	03	06 00	D0 D0	02 00	0A 30	00 00
	Increment		BE EF	03	06 00	B6 D0	04 00	0A 30	00 00
	Decrement		BE EF	03	06 00	67 D1	05 00	0A 30	00 00
ZOOM Reset	Execute		BE EF	03	06 00	98 C9	06 00	70 70	00 00
KEYSTONE V	Get		BE EF	03	06 00	B9 D3	02 00	07 20	00 00
	Increment		BE EF	03	06 00	DF D3	04 00	07 20	00 00
	Decrement		BE EF	03	06 00	0E D2	05 00	07 20	00 00
KEYSTONE V Reset	Execute		BE EF	03	06 00	08 D0	06 00	0C 70	00 00
WHISPER	Set	NORMAL	BE EF	03	06 00	3B 23	01 00	00 33	00 00
		WHISPER	BE EF	03	06 00	AB 22	01 00	00 33	01 00
	Get		BE EF	03	06 00	08 23	02 00	00 33	00 00
MIRROR	Set	NORMAL	BE EF	03	06 00	C7 D2	01 00	01 30	00 00
		H:INVERT	BE EF	03	06 00	57 D3	01 00	01 30	01 00
		V:INVERT	BE EF	03	06 00	A7 D3	01 00	01 30	02 00
		H&V:INVERT	BE EF	03	06 00	37 D2	01 00	01 30	03 00
	Get		BE EF	03	06 00	F4 D2	02 00	01 30	00 00
VOLUME	Get		BE EF	03	06 00	31 D3	02 00	01 20	00 00
	Increment		BE EF	03	06 00	57 D3	04 00	01 20	00 00
	Decrement		BE EF	03	06 00	86 D2	05 00	01 20	00 00
MUTE	Set	TURN OFF	BE EF	03	06 00	46 D3	01 00	02 20	00 00
		TURN ON	BE EF	03	06 00	D6 D2	01 00	02 20	01 00
	Get		BE EF	03	06 00	75 D3	02 00	02 20	00 00
LANGUAGE	Set	ENGLISH	BE EF	03	06 00	F7 D3	01 00	05 30	00 00
		FRANÇAIS	BE EF	03	06 00	67 D2	01 00	05 30	01 00
		DEUTSCH	BE EF	03	06 00	97 D2	01 00	05 30	02 00
		ESPAÑOL	BE EF	03	06 00	07 D3	01 00	05 30	03 00
		ITALIANO	BE EF	03	06 00	37 D1	01 00	05 30	04 00
		NORSK	BE EF	03	06 00	A7 D0	01 00	05 30	05 00
		NEDERLANDS	BE EF	03	06 00	57 D0	01 00	05 30	06 00
		PORTUGUÊS	BE EF	03	06 00	C7 D1	01 00	05 30	07 00
		日本語	BE EF	03	06 00	37 D4	01 00	05 30	08 00
		简体中文	BE EF	03	06 00	A7 D5	01 00	05 30	09 00
		繁體中文	BE EF	03	06 00	37 DE	01 00	05 30	10 00
		한글	BE EF	03	06 00	57 D5	01 00	05 30	0A 00
		SVENSKA	BE EF	03	06 00	C7 D4	01 00	05 30	0B 00
		РУССКИЙ	BE EF	03	06 00	F7 D6	01 00	05 30	0C 00
		SUOMI	BE EF	03	06 00	67 D7	01 00	05 30	0D 00
		POLSKI	BE EF	03	06 00	97 D7	01 00	05 30	0E 00
		TÜRKÇE	BE EF	03	06 00	07 D6	01 00	05 30	0F 00
	Get		BE EF	03	06 00	C4 D3	02 00	05 30	00 00
MENU POSITION H	Get		BE EF	03	06 00	04 D7	02 00	15 30	00 00
	Increment		BE EF	03	06 00	62 D7	04 00	15 30	00 00
	Decrement		BE EF	03	06 00	B3 D6	05 00	15 30	00 00
MENU POSITION H Reset	Execute		BE EF	03	06 00	DC C6	06 00	43 70	00 00

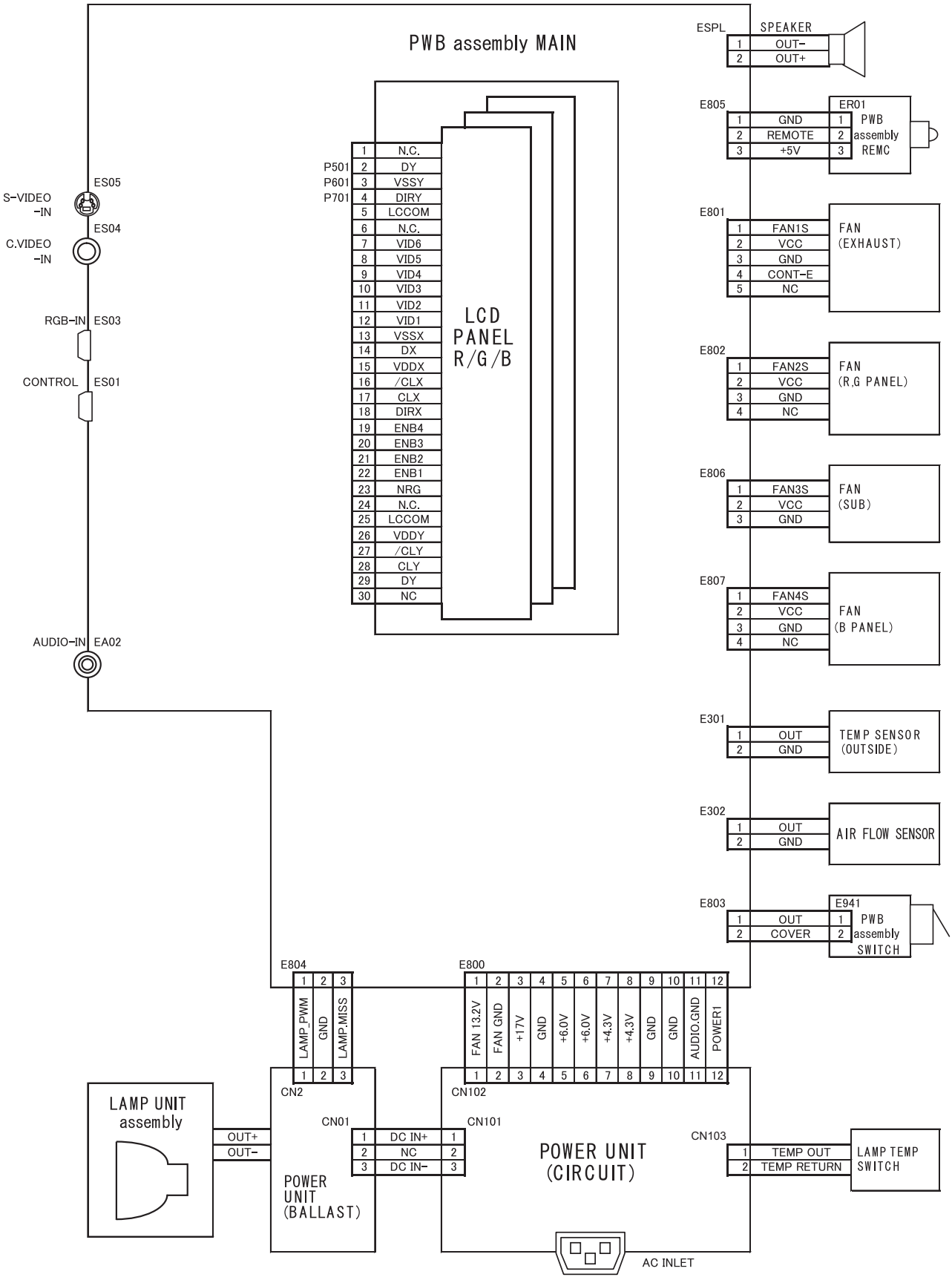
Names	Operation Type		Header			CRC	Command Data		
							Action	Type	Setting Code
MENU POSITION V	Get		BE EF	03	06 00	40 D7	02 00	16 30	00 00
	Increment		BE EF	03	06 00	26 D7	04 00	16 30	00 00
	Decrement		BE EF	03	06 00	F7 D6	05 00	16 30	00 00
MENU POSITION V Reset	Execute		BE EF	03	06 00	A8 C7	06 00	44 70	00 00
OSD BRIGHT	Get		BE EF	03	06 00	A8 D5	02 00	18 30	00 00
	Increment		BE EF	03	06 00	CE D5	04 00	18 30	00 00
	Decrement		BE EF	03	06 00	1F D4	05 00	18 30	00 00
BLANK	Set	My Screen	BE EF	03	06 00	FB CA	01 00	00 30	20 00
		ORIGINAL	BE EF	03	06 00	FB E2	01 00	00 30	40 00
		BLUE	BE EF	03	06 00	CB D3	01 00	00 30	03 00
		WHITE	BE EF	03	06 00	6B D0	01 00	00 30	05 00
		BLACK	BE EF	03	06 00	9B D0	01 00	00 30	06 00
	Get		BE EF	03	06 00	08 D3	02 00	00 30	00 00
BLANK On/Off	Set	TURN OFF	BE EF	03	06 00	FB D8	01 00	20 30	00 00
		TURN ON	BE EF	03	06 00	6B D9	01 00	20 30	01 00
	Get		BE EF	03	06 00	C8 D8	02 00	20 30	00 00
START UP	Set	My Screen	BE EF	03	06 00	CB CB	01 00	04 30	20 00
		ORIGINAL	BE EF	03	06 00	0B D2	01 00	04 30	00 00
		TURN OFF	BE EF	03	06 00	9B D3	01 00	04 30	01 00
	Get		BE EF	03	06 00	38 D2	02 00	04 30	00 00
My Screen LOCK	Set	TURN OFF	BE EF	03	06 00	3B EF	01 00	C0 30	00 00
		TURN ON	BE EF	03	06 00	AB EE	01 00	C0 30	01 00
	Get		BE EF	03	06 00	08 EF	02 00	C0 30	00 00
Message	Set	TURN OFF	BE EF	03	06 00	8F D6	01 00	17 30	00 00
		TURN ON	BE EF	03	06 00	1F D7	01 00	17 30	01 00
	Get		BE EF	03	06 00	BC D6	02 00	17 30	00 00
AUTO SEARCH	Set	TURN OFF	BE EF	03	06 00	B6 D6	01 00	16 20	00 00
		TURN ON	BE EF	03	06 00	26 D7	01 00	16 20	01 00
	Get		BE EF	03	06 00	85 D6	02 00	16 20	00 00
AUTO POWER OFF	Get		BE EF	03	06 00	08 86	02 00	10 31	00 00
	Increment		BE EF	03	06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF	03	06 00	BF 87	05 00	10 31	00 00
LAMP TIME	Get		BE EF	03	06 00	C2 FF	02 00	90 10	00 00
LAMP TIME Reset	Execute		BE EF	03	06 00	58 DC	06 00	30 70	00 00
FILTER TIME	Get		BE EF	03	06 00	C2 F0	02 00	A0 10	00 00
FILER TIME Reset	Execute		BE EF	03	06 00	98 C6	06 00	40 70	00 00
MAGNIFY	Get		BE EF	03	06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF	03	06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF	03	06 00	CB D3	05 00	07 30	00 00
FREEZE	Set	NORMAL	BE EF	03	06 00	83 D2	01 00	02 30	00 00
		FREEZE	BE EF	03	06 00	13 D3	01 00	02 30	01 00
	Get		BE EF	03	06 00	B0 D2	02 00	02 30	00 00

11. Block diagram



Block diagram

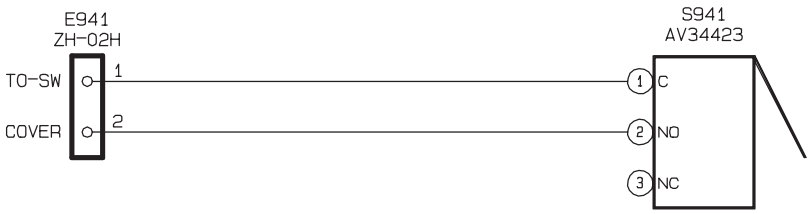
12. Connector connection diagram



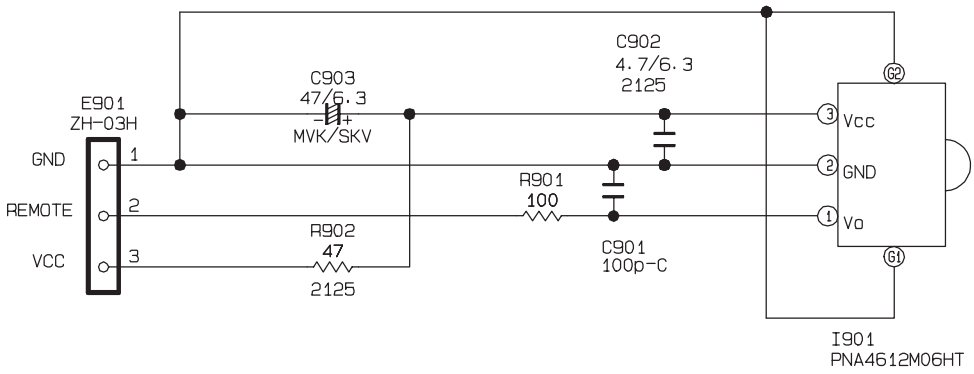
Connector connection diagram

13. Basic circuit diagram

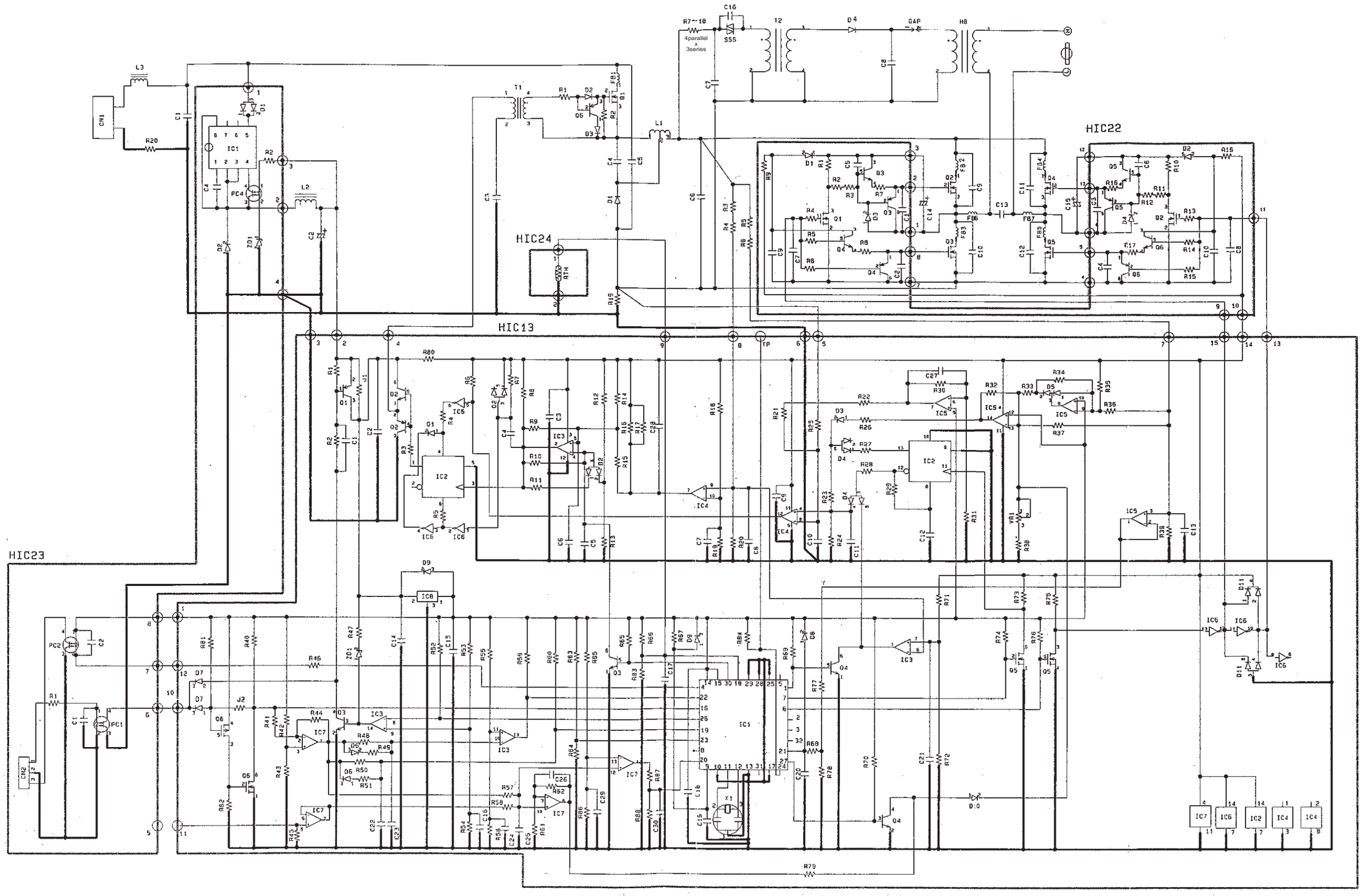
Parts with hatching are not mounted.



PWB assembly SW (C12H)

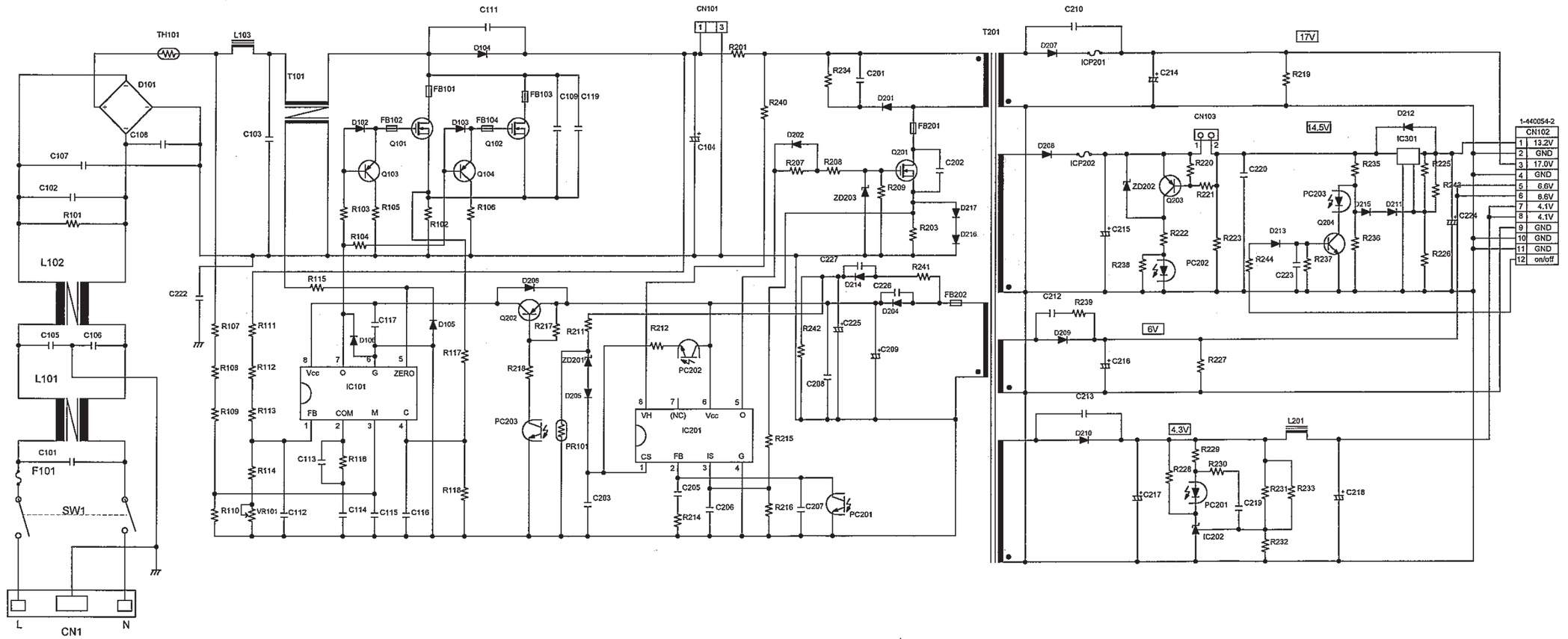


PWB assembly REMC (C12H)



⚠ Warning
For handling of the circuit diagram, refer to the warning on the cover.

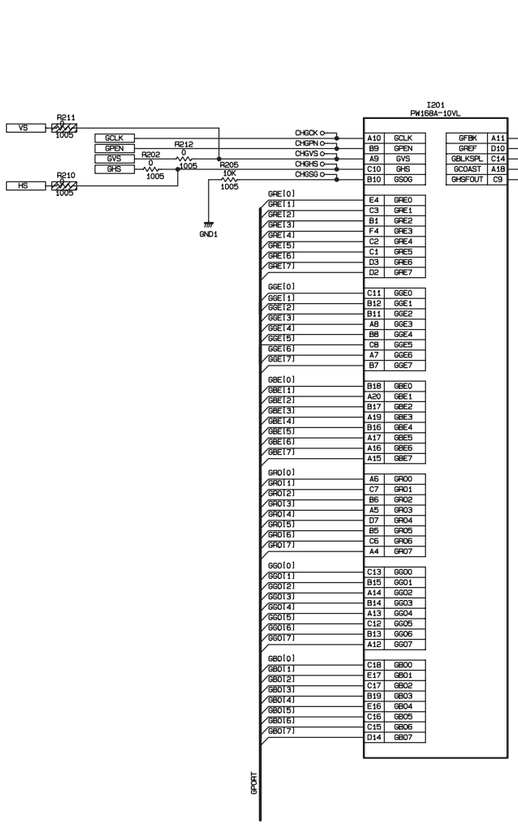
POWER UNIT (BALLAST) (C12H)

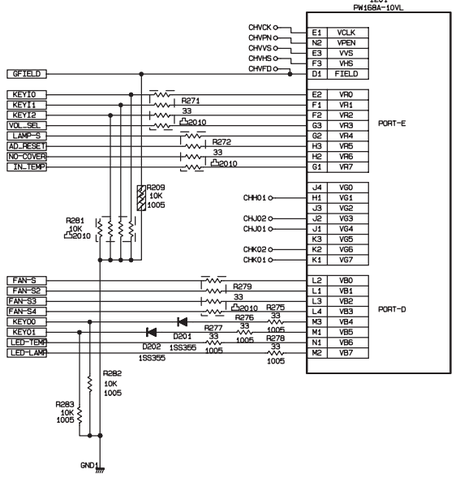


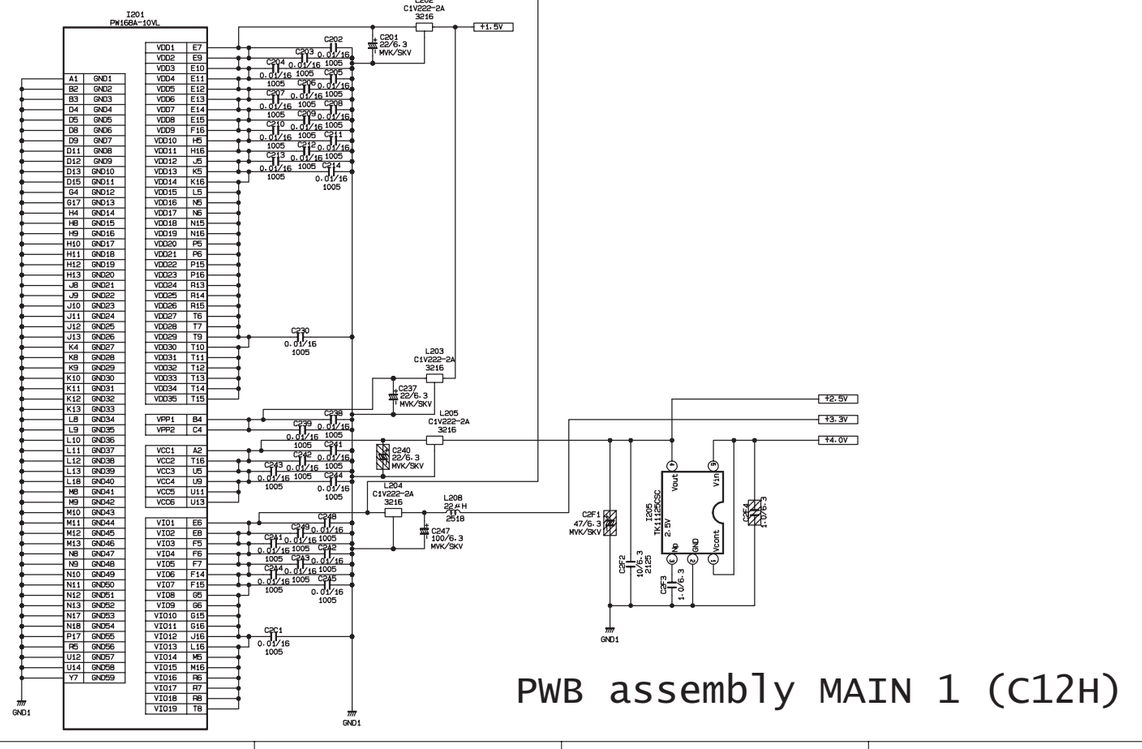
⚠ Warning
For handling of the circuit diagram, refer to the warning on the cover.

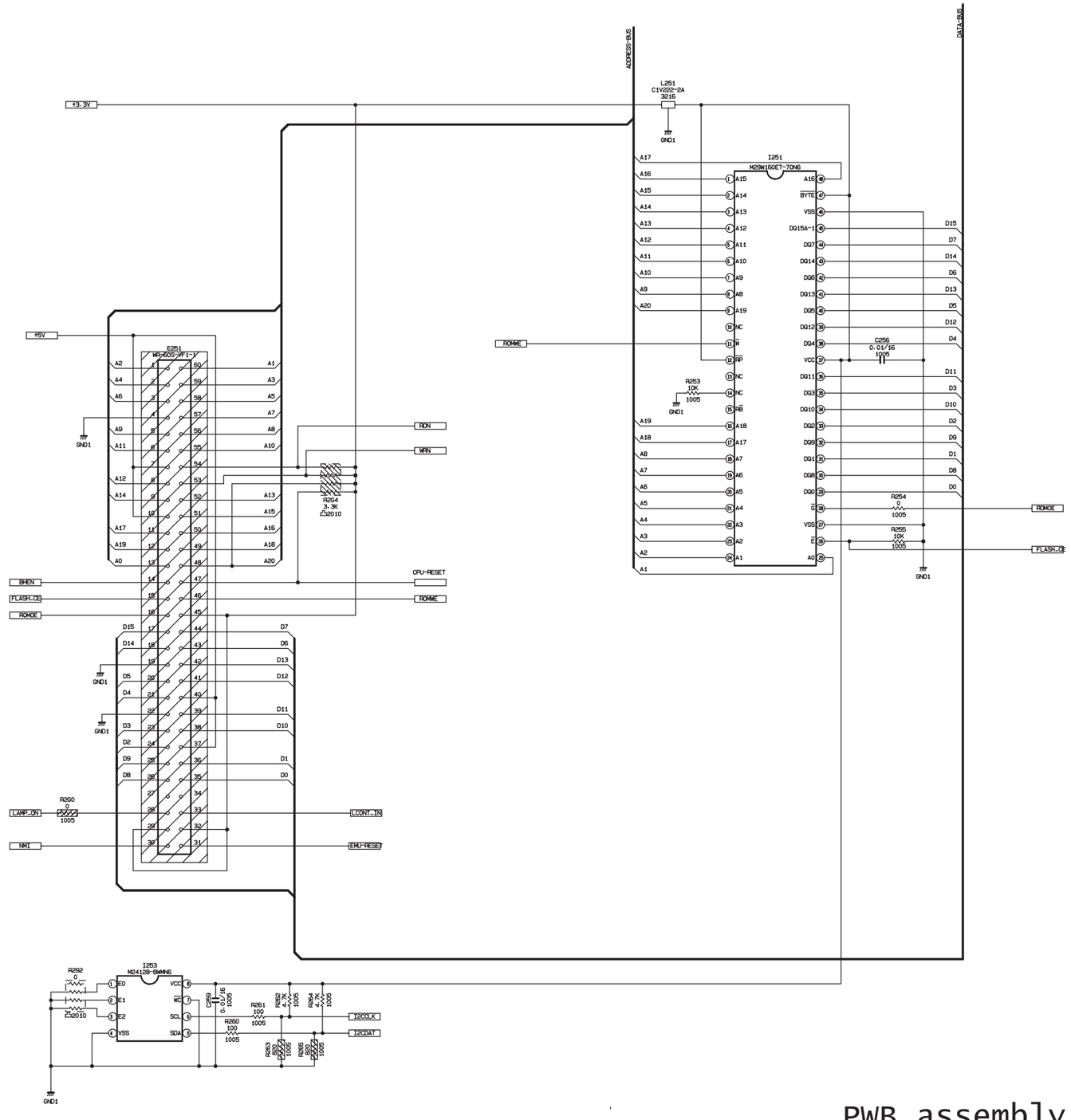
POWER UNIT (CIRCUIT) (C12H)

PWB assembly MAIN 1 (C12H)

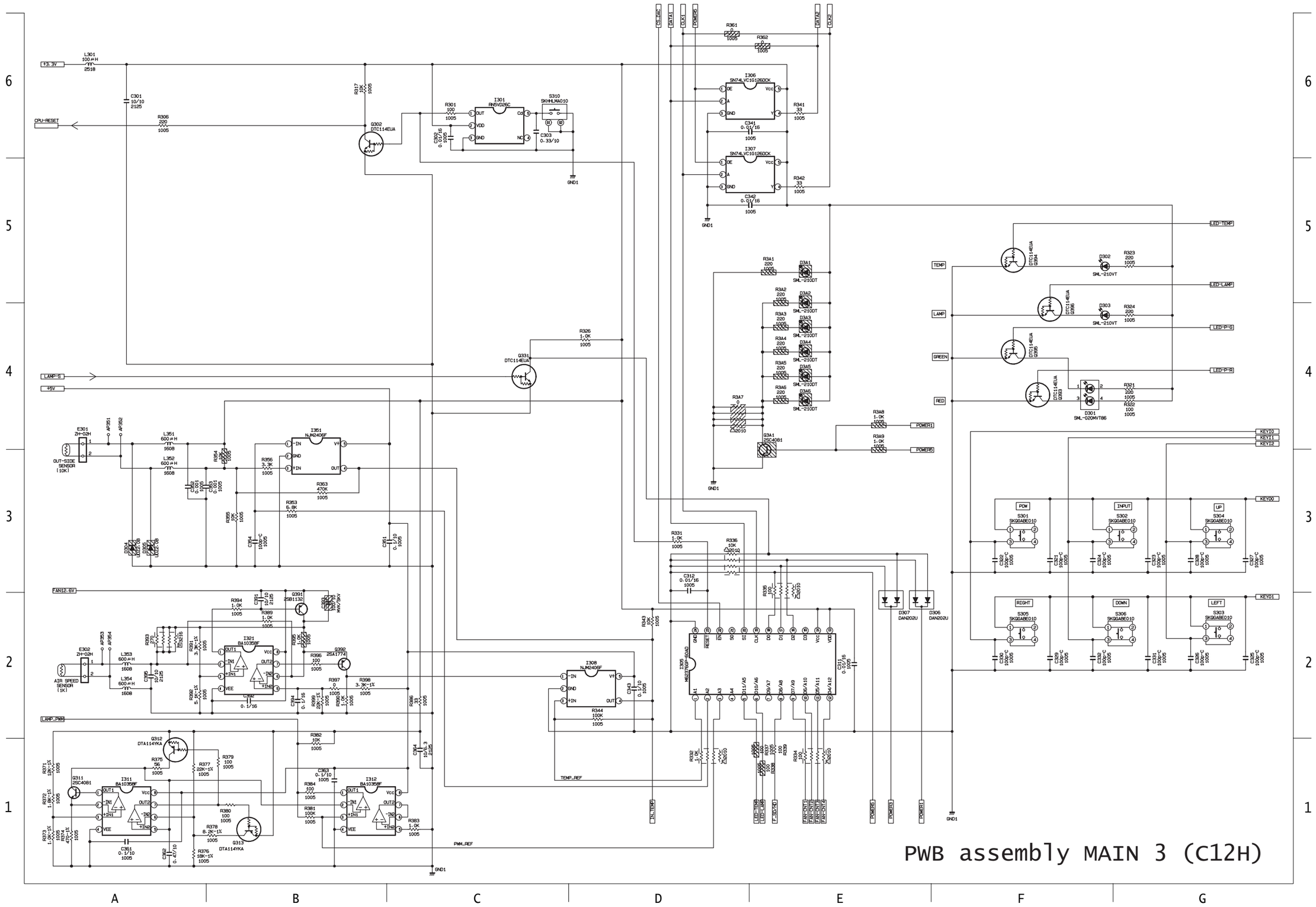


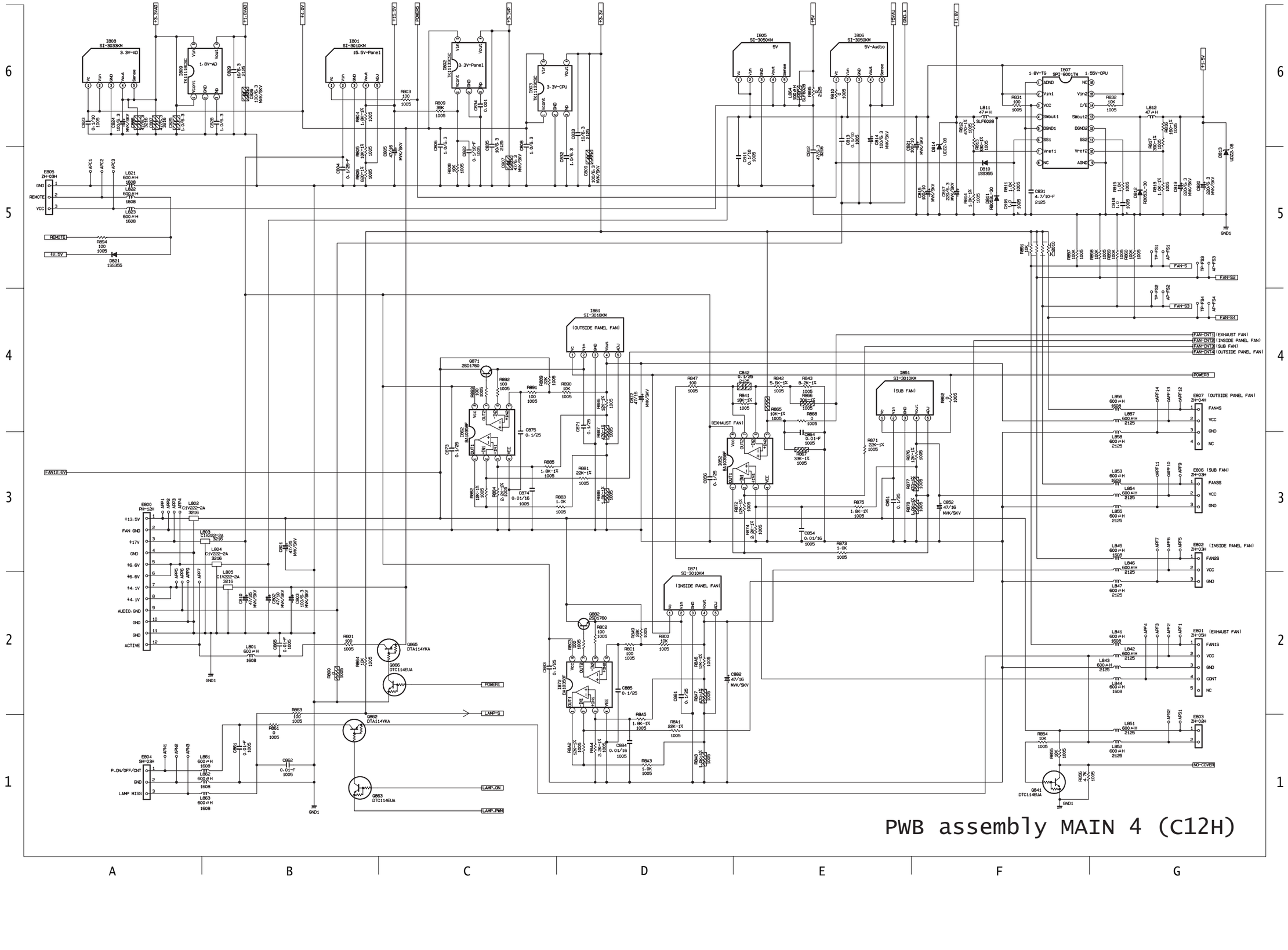


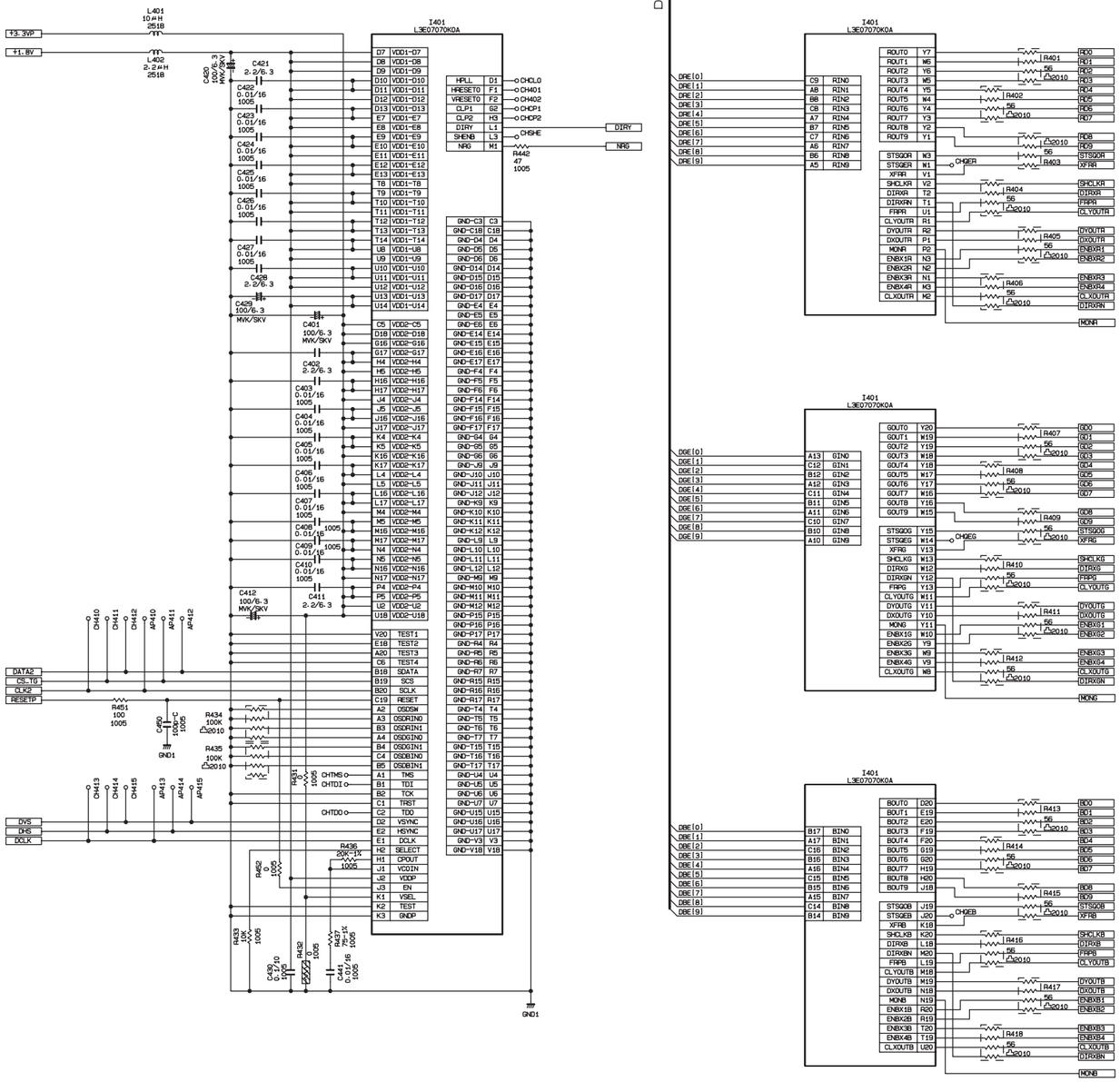




PWB assembly MAIN 2 (C12H)

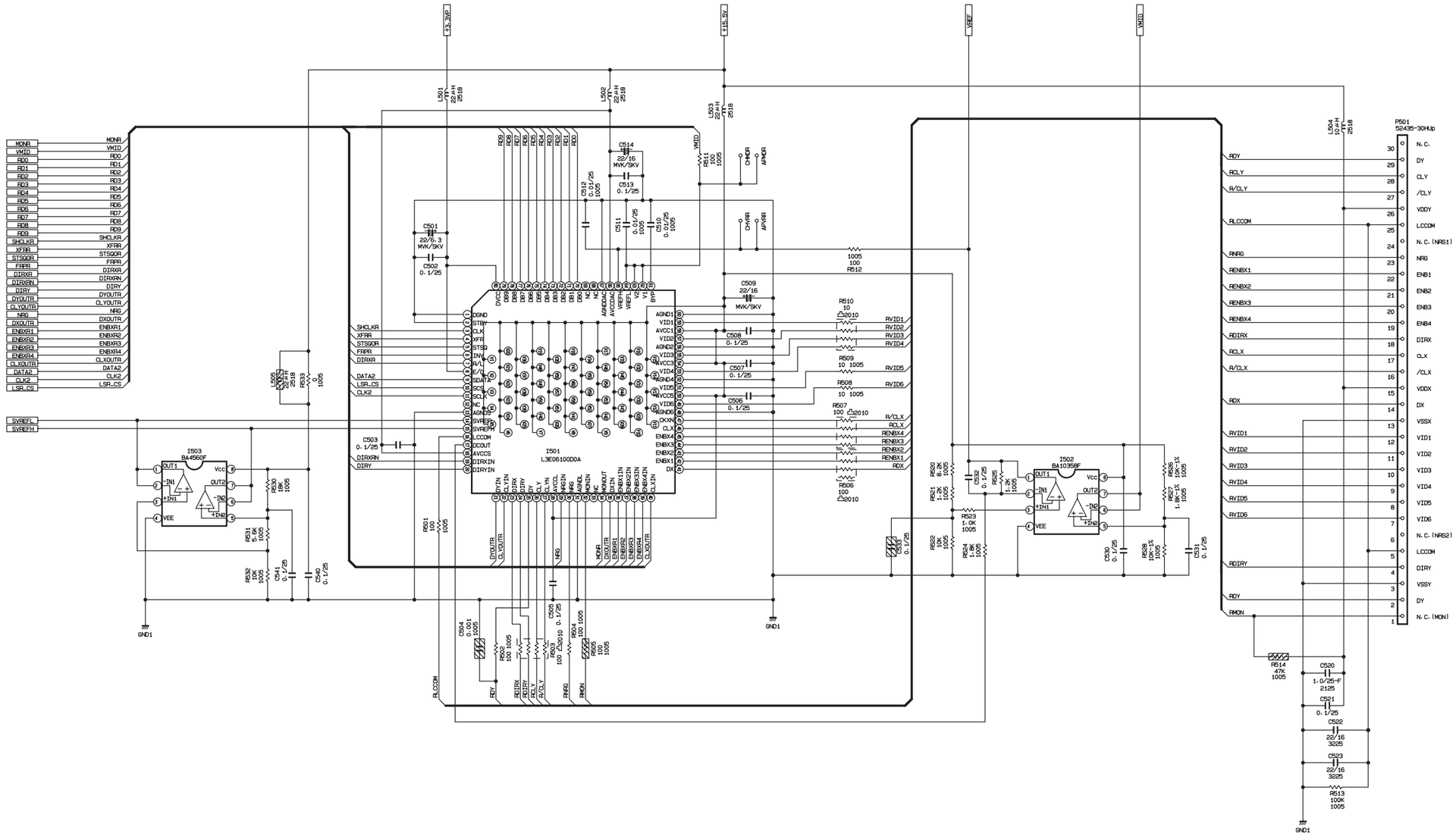

+3.3V
L301 100μH 2518
C301 10/10 2125
CPU-RESET
R306 220 1005
R317 0K 1005
Q302 DTC114EUA
R301 100 1005
I301 RN5VD28C
C302 0.01/16 1005
C303 0.33/10
S310 SKHHLMA010
GND1
R326 1.0K 1005
Q331 DTC114EUA
LAMP-S
+5V
E301 ZH-02H
AP351
AP352
OUT-SIDE SENSOR (10K)
L351 600μH 1608
L352 600μH 1608
R354 0 1005
R356 3.3K 1005
I351 NJM2406F
R363 470K 1005
R353 6.8K 1005
C352 0.001 1005
R355 10K 1005
C353 0.001 1005
C354 0.001 1005
C351 0.1/10 1005
D304 1SS226
D305 1SS226
D306 1SS226
FAN12.6V
E302 ZH-02H
AP353
AP354
AIR SPEED SENSOR (1K)
L353 600μH 1608
L354 600μH 1608
R393 22Ω 1005
R391 3.3K-1% 1005
D301 MA216
I321 BA10358F
C395 10/10 2125
R392 5.1K-1% 1005
C392 0.1/16
R394 1.0K 1005
C391 10/10 2125
Q391 2SB1132
R389 1.0K 1005
C393 0.1/50 MIK/35V
R388 1.0K 1005
Q392 2SA1774
R396 100 1005
R397 0 1005
R398 3.3K-1% 1005
R395 2.2K-1% 1005
R390 10K 1005
C394 0.1/16
R386 10K 1005
LAMP_PWM
Q312 DTA114YKA
R375 56 1005
R377 22K-1% 1005
R379 100 1005
R382 10K 1005
C363 0.1/10 1005
C364 10/6.3 2125
R371 18K-1% 1005
Q311 2SC4081
I311 BA10358F
R372 1.8K-1% 1005
R373 1.8K-1% 1005
R374 47K-1% 1005
C361 0.1/10 1005
C362 0.1/10
R376 18K-1% 1005
R380 100 1005
Q313 DTA114YKA
R378 8.2K-1% 1005
I312 BA10358F
R384 100 1005
R381 100K 1005
R383 1.0K 1005
PWM_REF
GND1
I308 NJM2405F
R343 10K 1005
C343 0.1/10 1005
R344 100K 1005
TEMP_REF
IN_TEMP
CS_DAC
DATA1
CLK1
POWER5
DATA2
CLK2
R361 0 1005
R362 0 1005
I306 SN74LVC161260CK
R341 33 1005
C341 0.01/16 1005
I307 SN74LVC161260CK
R342 33 1005
C342 0.01/16 1005
R3A1 220 1005
D3A1 SML-210DT
R3A2 220 1005
D3A2 SML-210DT
R3A3 220 1005
D3A3 SML-210DT
R3A4 220 1005
D3A4 SML-210DT
R3A5 220 1005
D3A5 SML-210DT
R3A6 220 1005
D3A6 SML-210DT
R3A7 0 2010
R3A8 1.0K 1005
R3A9 1.0K 1005
Q3A1 2SC4081
POWER1
POWER5
I305 M52790SP-60AD
RESET
EN
S0
S1
CLK
D0
D1
D2
D3
Vcc
VDD
A1
A2
A3
A4
D11/A5
D10/A6
D9/A7
D8/A8
D7/A9
D6/A10
D5/A11
D4/A12
C311 0.01/16 1005
R332 1.0K 1005
R333 10K 2010
R334 10K 2010
R335 100 1005
R339 100 1005
R338 100 2010
D307 DAN202U
D306 DAN202U
LED-TEMP
LED-LAMP
LED-P-G
LED-P-R
TEMP
LAMP
GREEN
RED
Q304 DTC114EUA
Q305 DTC114EUA
Q306 DTC114EUA
Q303 DTC114EUA
D302 SML-210VT
D303 SML-210VT
D301 SML-020MVT86
R323 220 1005
R324 220 1005
R321 220 1005
R322 100 1005
KEY10
KEY11
KEY12
KEY00
KEY01
POW
INPUT
UP
RIGHT
DOWN
LEFT
S301 SKGGABE010
S302 SKGGABE010
S304 SKGGABE010
S305 SKGGABE010
S306 SKGGABE010
S303 SKGGABE010
C302 100p-C 1005
C301 100p-C 1005
C304 100p-C 1005
C303 100p-C 1005
C308 100p-C 1005
C307 100p-C 1005
C309 100p-C 1005
C310 100p-C 1005
C305 100p-C 1005
C306 100p-C 1005
C311 100p-C 1005
C312 100p-C 1005
LED-TEMP
LED-LAMP
FAN-ON1
FAN-ON2
FAN-ON3
POWER5
POWER3
POWER1
GND1
PWB assembly MAIN 3 (C12H)


PWB assembly MAIN 4 (C12H)
I808 SI-3033KM 3.3V-AD
I809 TK11118SC 1.8V-AD
I801 SI-3010KM +5.5V-Panel
I802 TK11133SC 3.3V-Panel
I803 TK11133SC 3.3V-CPU
I805 SI-3050KM 5V
I806 SI-3050KM 5V-Audio
I807 SPI-8001TW 1.8V-TG 1.55V-CPU
I851 SI-3010KM (OUTSIDE PANEL FAN)
I852 SI-3010KM (EXHAUST FAN)
I871 SI-3010KM (INSIDE PANEL FAN)
I851 SI-3010KM (SUB FAN)
E805 ZH-03H GND REMOTE VCC
E804 SH-03H P_ON/OFF/CNT GND LAMP MISS
E800 PH-12H +13.5V FAN GND +17V GND +6.6V +6.6V +4.1V +4.1V AUDIO.GND GND GND ACTIVE
E807 (OUTSIDE PANEL FAN) ZH-04H FAN4S VCC GND NC
E806 (SUB FAN) ZH-03H FAN3S VCC GND
E802 (INSIDE PANEL FAN) ZH-03H FAN2S VCC GND
E801 (EXHAUST FAN) ZH-05H FAN1S VCC GND CONT NC
E803 ZH-02H NO-COVER
FAN-CNT1 (EXHAUST FAN)
FAN-CNT2 (INSIDE PANEL FAN)
FAN-CNT3 (SUB FAN)
FAN-CNT4 (OUTSIDE PANEL FAN)
FAN-S FAN-S2 FAN-S3 FAN-S4
POWER1 POWER3
LAMP-S LAMP_ON LAMP_PWM
REMOTE +2.5V FAN12.6V
GND1



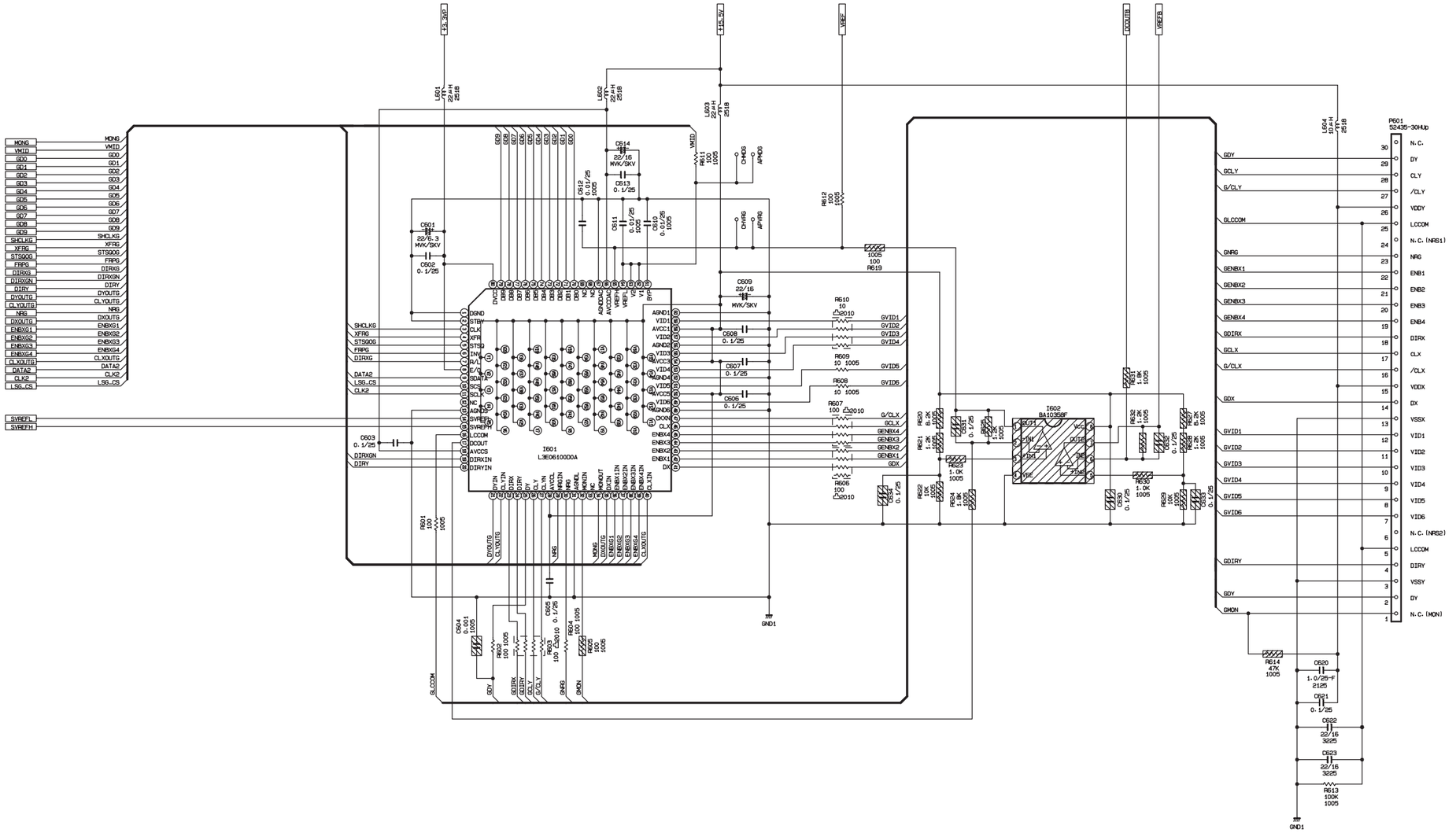
PWB assembly MAIN 5 (C12H)

R Panel Part



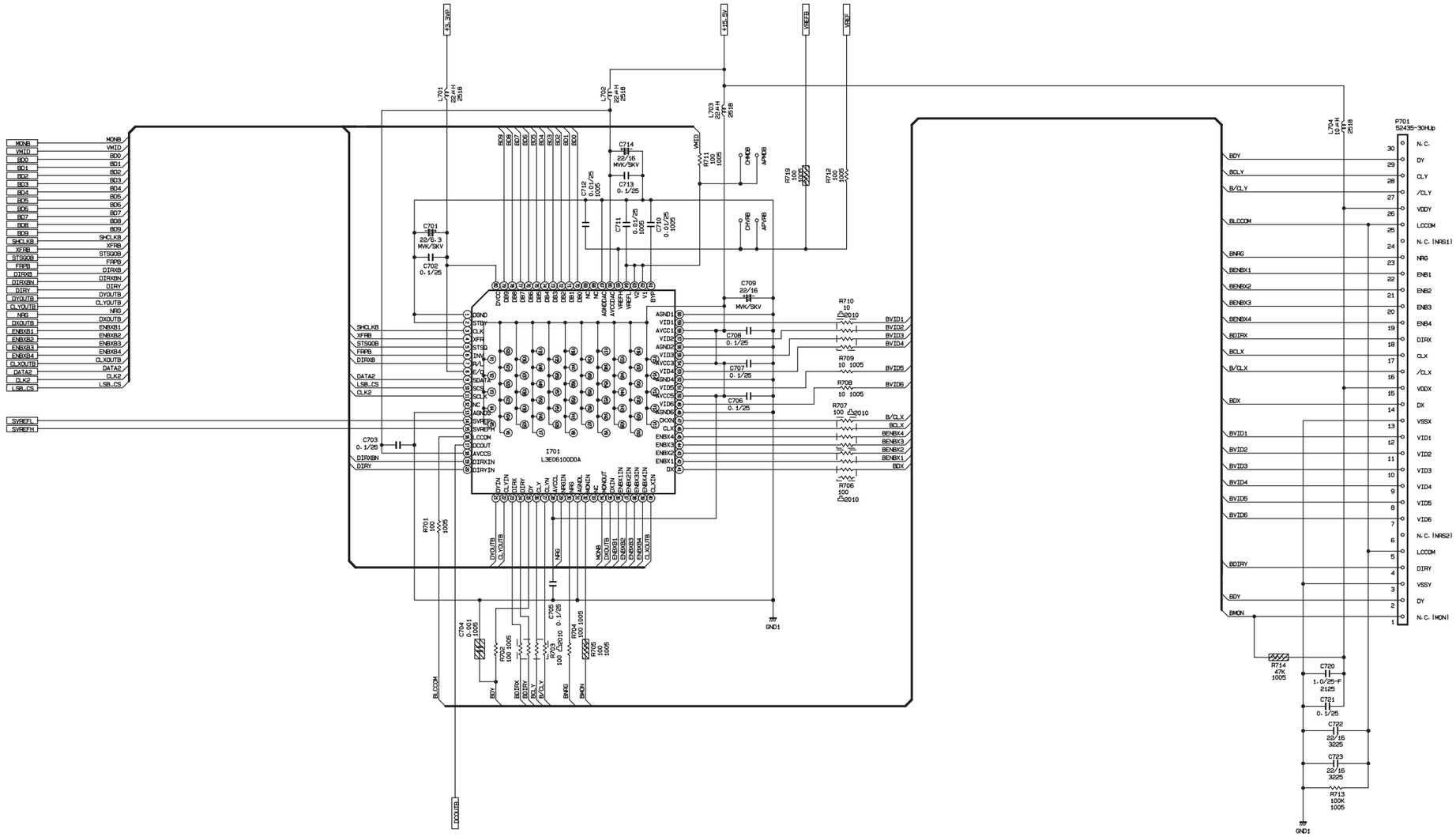
PWB assembly MAIN 6 (C12H)

G Panel Part

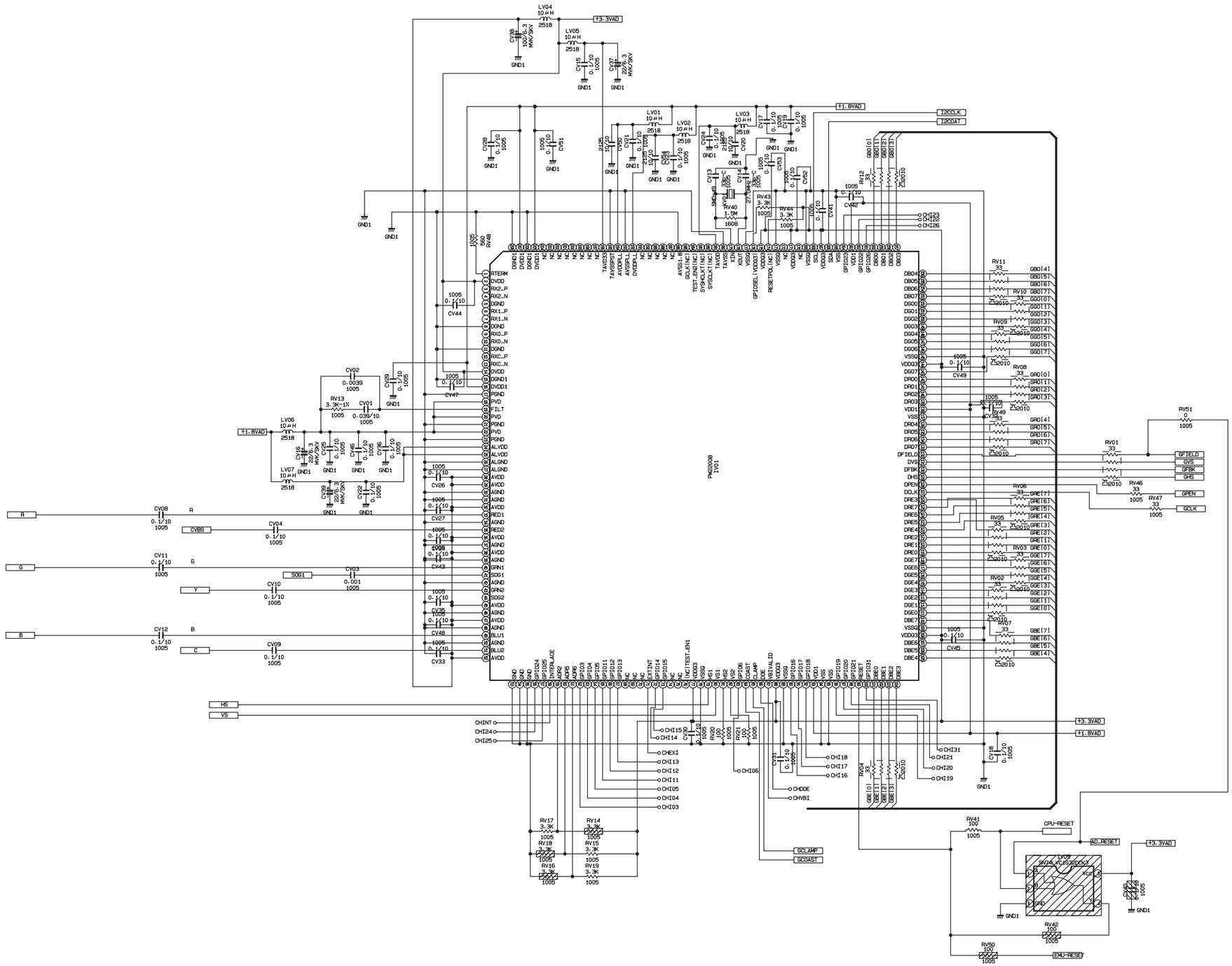


PWB assembly MAIN 7 (C12H)

B Panel Part



PWB assembly MAIN 8 (C12H)

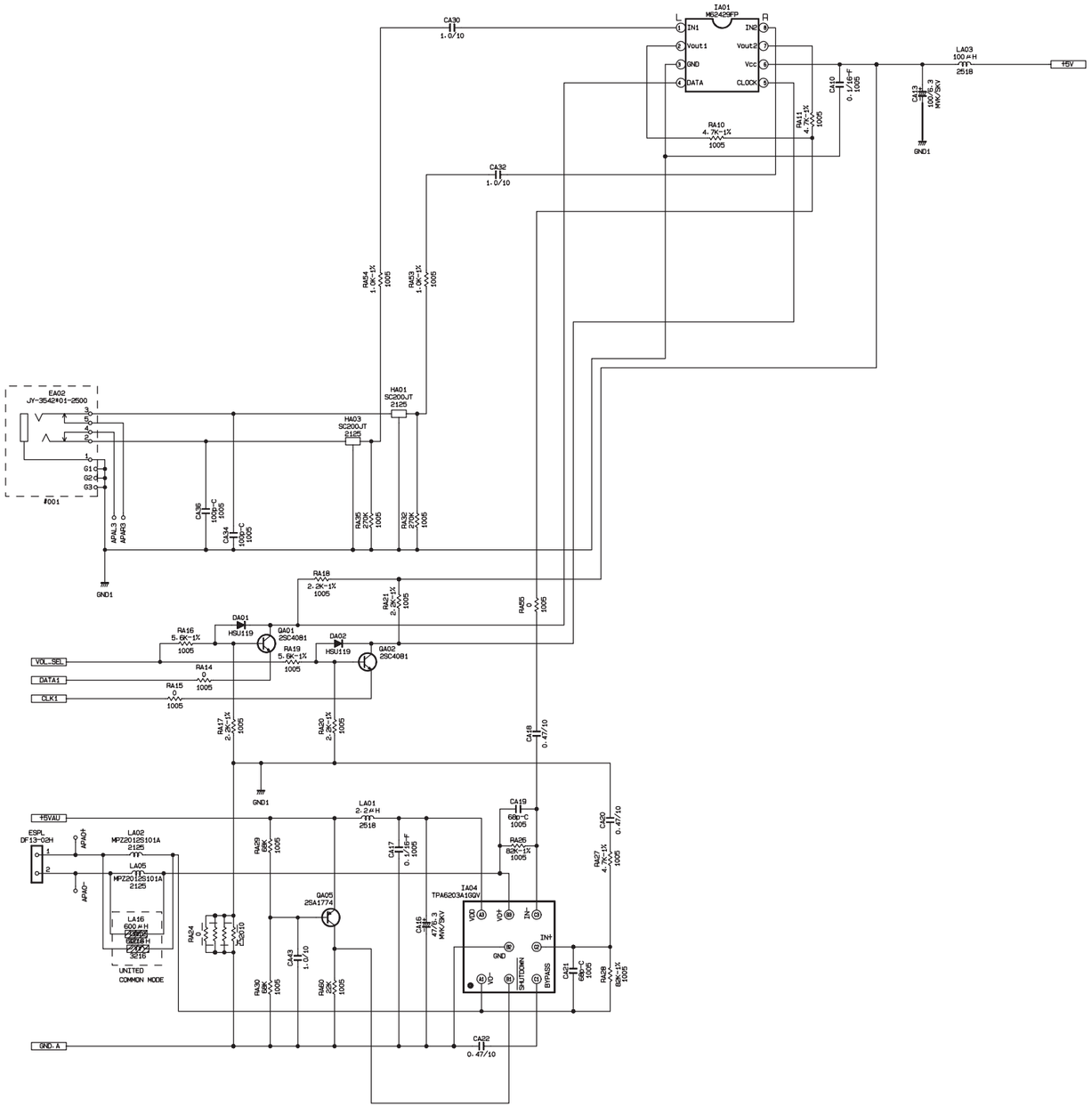


PWB assembly MAIN 9 (C12H)

RGB IN

RS232C

PWB assembly MAIN 10 (C12H)



PWB assembly MAIN 11 (C12H)

MEMO

Basic circuit diagram list

PWB assembly SW
PWB assembly REMC
POWER UNIT BALLAST
POWER UNIT CIRCUIT
PWB assembly MAIN 1
PWB assembly MAIN 2
PWB assembly MAIN 3
PWB assembly MAIN 4
PWB assembly MAIN 5
PWB assembly MAIN 6
PWB assembly MAIN 7
PWB assembly MAIN 8
PWB assembly MAIN 9
PWB assembly MAIN 10
PWB assembly MAIN 11

HITACHI

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